RAILROAD GAZETTE

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Tests of the New 10-Wheel Locomotives of the Great Northern.

In our last issue the new 10-wheel locomotives built by the Brooks Locomotive Works for the Great Northern were illustrated and it was then said that one of these engines had been tested in passenger and freight service. These tests were made on the Montana Central Division, between Clancy and Woodville, Mont., a distance of 48.1 miles.

The maximum grades are 2.2 per cent. combined with 10° reverse curves. The road ascends 1,240 ft. in 12.6 miles, between Clancy and the tunnel between Portal and Amazon; it then descends 552 ft. to Boulder, thence it ascends to Elk Park with a rise of 1,321 ft. in 20.2 miles. From Elk Park to Woodville the rise is 121 ft. in 8.7 miles, and the total rise between Clancy and Woodville is 2,682 ft. in 41.5 miles, representing an average ascending grade of 1.23 per cent., or 64.7 ft. per mile. In this average the down grade section between the Boulder Tunnel and Boulder is omitted, for on that section the throttle is always closed, and no work is done by the engine. The grade between Clancy and Portal, a distance of 11.7 miles, is for the most part 2.2 per cent., as is also that between Bernice and Elk Park, a distance of eight miles.

On July 28, the test with a passenger train was made, the train consisting of five cars, which weighed 157 tons. On the following day the trial was repeated with a freight train consisting of ten loaded cars, weighing 410 tons, and a way car weighing seven tons; the same engine was used for both tests, which, including the tender, weighed 132 tons in working order. The following is the schedule of the two runs:

	—Passenger.—			—Freight.—		
Station or stop.	Arr.	Dep.	Delay.	Arr.	Dep.	D'ly.
Clancy	..	6:14	..	..	12:15	..
Stalled, new and greasy rail	..	..	..	1:20	1:35	15
Portal station	6:48	..	..	1:48	1:48	..
				Tank.		
Amazon	6:56	7:02	6	1:57	2:05	8
Reducing Rig Broke	7:09	7:21½	12½	..	..	..
Boulder	7:26½	7:28	1½	2:24	2:26	2
Basin	7:45½	7:48	2½	2:54	3:16	22
Basin tank	7:48½	7:51½	3	3:19	3:21	2
Bernice	7:59½	8:00	½	..	..	..
Elk Park	8:18	8:19	1	4:15	4:23	8
Trask	..	..	..	4:36	4:40	4
Woodville	8:31	A. M.	..	4:50	P. M.	..

Low grade bituminous coal was used from the Sand Coulee mines, containing a large percentage of ash and non-combustible matter. The coal was measured by means of compartments in the coal space of the tender, which were supplemented by bags, each containing 100 lbs. of coal, for more accurate adjustment. The water was measured by a special float gage inserted in a pipe in the center of the tank. The water and fuel measurements were taken for the six different sections of the run, but the intermediate water measurements were found to be inaccurate, because of the difficulty in determining the true water line in the boiler while on a grade; the gage glass was marked at the water line at the beginning of each test and when the water readings were taken the boiler was filled to that point, or to an equivalent point when the engine was on a grade. The waste of the injector was calculatod from the number of applications and the estimated waste of each application. No deductions were made for steam used by the air pump or lost at the safety valves. The fire was put in as nearly the same condition as practicable at the end of the test as at the beginning.

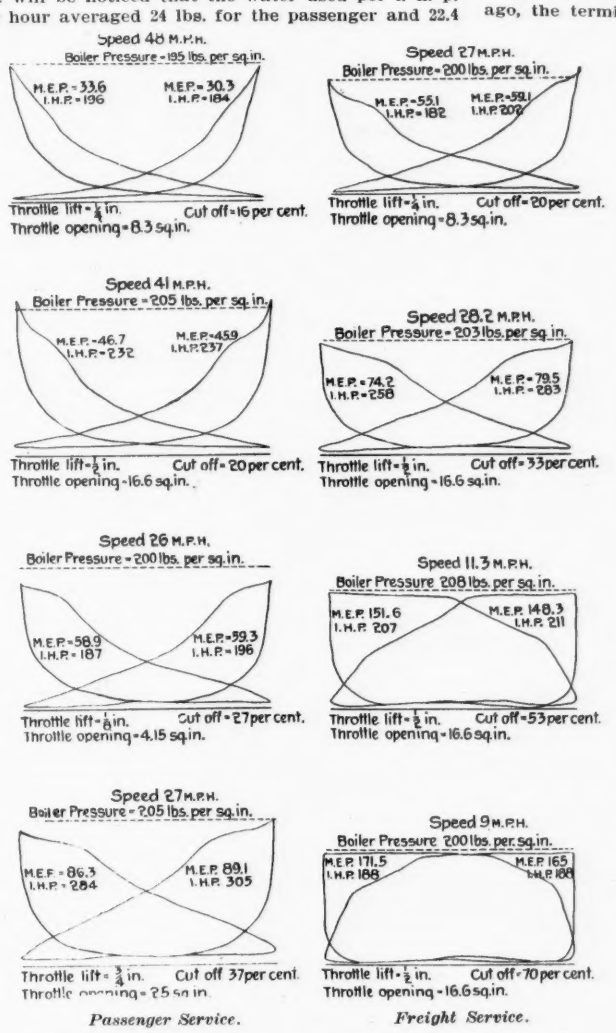
Two Crosby indicators were used fitted with ¾-in. pipes lagged with asbestos, and diagrams were taken from both sides of the engine at each mile post; the cab readings were also taken at the mile posts. The throttle lift was determined by removing the dome cover and marking the trottle rod previous to the tests; the lift of the valve when fully open was found to be 1⅛ in. A single exhaust nozzle was used 5⅜ in. in diameter.

On both days of the test the weather was favorable, with very light winds, and the rail was in good condition; the mean temperature during the test with the passenger train was 76° Fahr., and 85° Fahr., during the freight test. The general results are given in the following table, while the engravings show sample indicator diagrams taken in passenger and freight service:

General Results.

Kind of train	Passenger.	Freight.
Time on the road, hrs., min.	2:17	4:35
Actual time in motion, hrs., min.	1:50	3:34
Time during which power was developed, hrs., min.	1:34	3:10
Maximum speed, m. per hr.	49.5	33.8
Average speed, m. per hr.	26.2	13.5
Maximum revolutions per minute	264	180
Maximum piston speed, ft per min.	1,320	900
Maximum boiler pressure	210	210
Minimum boiler pressure	185	165
Average boiler pressure	196.4	198
Prevailing position of throttle-lift, in.	0.5	0.5
" throttle opening, sq. in.	16.6	16.6
" cut-off, per cent.	23 & 33	28, 33 & 60.
Total weight of coal consumed, lbs.	7,300	11,600
Miles per ton of coal	13.2	8.3
Coal used per mile, lbs.	152	241
Coal used per 100 tons of train per mile, lbs.	52.7	44.0
Coal burned while throttle was open, lbs.	7,050	11,300
Average lbs. of coal burned per sq. ft. of grate per hr.	127	101
Water drawn from tank, lbs.	35,000	59,600
Waste of injector, lbs.	225	240
Feed water used, lbs.	34,775	59,360
Temperature feed water used, deg. Fh.	56	56
Water used per mile, lbs.	724	1,235
Water used per 100 tons of train per mile, lbs.	251	225
Water used per hour, lbs.	22,160	18,750
Water used per sq. ft. of heating surface per hr.	8.28	7.01
Water used per sq. ft. of grate surface, per hr.	626	529
Actual evaporation per lb. of coal	4.93	5.27
Equivalent evaporation from and at 212 deg. Fh. per lb. coal	6.00	6.40
Maximum i. h. p. developed	1,468	1,116
Average i. h. p. developed	922	839
Coal per i. h. p. per hour, lbs.	4.87	4.26
Water per i. h. p. per hour, lbs.	24	22.4
Sq. ft. of heating surface per average i. h. p.	2.9	3.19
Average i. h. p. per sq. ft. of grate surface	26.1	23.6

It will be noticed that the water used per i. h. p. per hour averaged 24 lbs. for the passenger and 22.4 lbs. for the freight test, which are extremely low values, especially as no allowance was made for steam used by the air pump or lost at the safety valves, and some of our readers may hesitate to accept these figures as final. As much care, however, seems to have been taken in making the trials as is customary in road tests, and it should be borne in mind that with a much smaller locomotive at the Purdue testing plant a corresponding figure of 24.9 lbs. has been obtained under conditions where great accuracy of measurement was possible.


Speed 48 M.P.H.
Boiler Pressure - 195 lbs. per sq.in.
M.E.P. - 33.6
I.H.P. - 196
M.E.P. - 30.3
I.H.P. - 184
Throttle lift - ¼ in.
Cut off - 16 per cent.
Throttle opening - 8.3 sq.in.
Speed 27 M.P.H.
Boiler Pressure - 200 lbs. per sq.in.
M.E.P. - 55.1
I.H.P. - 182
M.E.P. - 59.1
I.H.P. 209
Throttle lift - ¼ in.
Cut off - 20 per cent.
Throttle opening - 8.3 sq.in.
Speed 41 M.P.H.
Boiler Pressure - 205 lbs. per sq.in.
M.E.P. - 46.7
I.H.P. - 232
M.E.P. - 45.9
I.H.P. 237
Throttle lift - ½ in.
Cut off - 20 per cent.
Throttle opening - 16.6 sq.in.
Speed 28.2 M.P.H.
Boiler Pressure - 203 lbs. per sq.in.
M.E.P. - 74.2
I.H.P. - 258
M.E.P. - 79.5
I.H.P. - 283
Throttle lift - ½ in.
Cut off - 33 per cent.
Throttle opening - 16.6 sq.in.
Speed 26 M.P.H.
Boiler Pressure - 200 lbs. per sq.in.
M.E.P. - 58.9
I.H.P. - 187
M.E.P. - 59.3
I.H.P. - 196
Throttle lift - ¼ in.
Cut off - 27 per cent.
Throttle opening - 4.15 sq.in.
Speed 11.3 M.P.H.
Boiler Pressure 208 lbs. per sq.in.
M.E.P. 151.6
I.H.P. 207
M.E.P. 148.3
I.H.P. 211
Throttle lift - ½ in.
Cut off - 53 per cent.
Throttle opening - 16.6 sq.in.
Speed 27 M.P.H.
Boiler Pressure - 205 lbs. per sq.in.
M.E.P. - 86.3
I.H.P. - 284
M.E.P. 89.1
I.H.P. 305
Throttle lift - ¾ in.
Cut off 37 per cent.
Speed 9 M.P.H.
Boiler Pressure 200 lbs. per sq.in.
M.E.P. 171.5
I.H.P. 188
M.E.P. 165
I.H.P. 188
Throttle lift - ½ in.
Cut off - 70 per cent.
Throttle opening - 16.6 sq.in.

Passenger Service. *Freight Service.*

Sample Indicator Diagrams from Great Northern Ten-Wheel Locomotive.

Attention may also be called to the sample indicator diagrams. All these were taken while the engine was working under a partially closed throttle and still the line of initial steam pressure in the cylinder approaches the line of boiler pressure more closely than might be expected with the throttle fully open. Of the diagrams taken at the higher speeds, the high initial pressures can probably be accounted for by the inertia of the moving parts of the indicator, but this is hardly a satisfactory explanation for those diagrams taken at low speeds. Those who made the tests consider that this effect is principally due to the large steam passages and piston valves. It might also occur through using weak indicator springs, although we are told that the springs were new and had been used but little previous to the tests, but they have not been calibrated since these diagrams were taken. It will readily be perceived that the effect of a weak spring would be to give too large a figure for the horsepower, which when divided into the water used per hour would result in a low value for the steam consumption. Assuming, however, that the diagrams represent correctly what took place in the cylinders, it would seem, from the diagrams shown and others which we do not reproduce, that there is practically no wire drawing through the throttle when the lift exceeds ¼ in.

Military Traffic on the Long Island Railroad.

The extraordinary demands made upon the Long Island Railroad Company, and the sudden increase of passenger and freight service that was needed to meet those demands, in connection with the establishment of the military camp at the eastern terminus of the road last August, constitute an episode in the railroad world which should be put on record. We are not at present able to do this satisfactorily; but in the absence of material for a more detailed account, we give below the substance of a few notes gathered in a conversation with General Superintendent W. F. Potter.

When the railroad company received official notification that a camp would be established at Montauk to receive the Fifth Army Corps from Santiago, the terminal facilities of the road at Montauk consisted of a small station, occupied as living rooms by the agent and his wife; with a little waiting room and a ticket office; a side track that held 10 cars and a Y for turning engines. The railroad terminal at Montauk is on a low, gravelly beach, the line extending to the foot of the hilly country which overlooks the ocean and the Sound, and which was to be occupied as a camping ground by the Fifth Army Corps. Montauk is reached by a single track road, and is 116 miles from the Long Island City and Brooklyn terminals.

As soon as possible the railroad company rushed two work trains and a large supply of material and men to Montauk, to make preparations for the arrival of cavalry regiments, which were delivered to the road at New York on the second day, and commenced to reach Montauk the morning of the third day after the railroad company was notified that a camp would be established. There were then no facilities for taking care of men or horses.

The first work was to establish a yard for cars. Four and a half miles (22,795 ft.) of track was laid, requiring 28 frogs and 28 switches and 5,200 yards of filling; this was done with great rapidity. The work of constructing the yard was begun on Thursday, and it was ready for use the following Sunday afternoon, and the cavalry regiments were accepted and taken care of as they arrived, without delay or interruption. In this track work 162 men were employed, and they had it substantially finished in six days.

The first structures put up were a coal bin and two platforms for unloading animals and wagons. The first building erected was a sleeping room for 50 railroad employees. This proved to be too small and 30 tents were added, with a cook house near by. The next building erected was an eating house for the general public, followed by a general waiting room, two large freight buildings for uses of the express company, a freight house and a 20,000 gal. water tank.

The area covered by the buildings was 17,524 sq. ft. The buildings were erected in the order named, and the work finished with great rapidity. At the same time a water pipe was laid from a well on

the high ground, 1,300 ft. away, a pump and boiler set up and connection made with the tank. On the buildings 105 men were employed for seven days.

The material for the buildings named, for two large storehouses for the Government and for a detention camp and general hospital, in addition to all supplies for a camp of 25,000 men, was rushed forward to Montauk as fast as possible; but the work was hardly under way before the Sixth Cavalry commenced to arrive, and this was followed by one or more regiments each day for 14 days. The transports discharged their men and cargoes from the dock near the railroad yard, and these troops came simultaneously with the arrival of those by rail, passing through the railroad yards. The railroad company's carpenters and laborers did a large amount of work on Government buildings.

One of the most pressing problems which confronted the railroad officers was to provide food and lodging for the men employed in the work of construction. During the first five days 275 men were fed three times a day on coffee and sandwiches, which were sent to Montauk from nearby points. To add to the burden, it rained in torrents for two days and two nights, at a time when the general outlook was anything but encouraging.

The business for the month of August on the Long Island Railroad is the heaviest of the year, and during this month and the month of September the road was running on its entire system (401 miles) 1,207 daily trains, with an average daily movement of 139 extra trains.

As has before been stated, Montauk is located on the south side of the island, and is reached by a single track road, which lies through a broken country, and therefore has many grades and curves. The road has the advantage of a double track on each of its two main arteries for 25 miles out of New York on one line and 36 miles on the other line, and there are two separate lines running as far east as Manor and Eastport; but from Eastport to Montauk, a distance of 45 miles, all the traffic passed over a single track. The daily average train movement over this line was 46 trains, the maximum movement for 24 hours being 50 trains. The facilities of the railroad company are always taxed to the utmost in August by the seashore passenger traffic. To meet the additional requirements the company secured from the Central Railroad of New Jersey ten engines, and these were manned by Central Railroad employees. Additional trainmen and station men, of whom many were needed, were found among men out of employment who had had experience on lines centering in and about New York. The number of extra men employed was 218, as follows: 147 trainmen, 39 operators and agents, 32 enginemen and firemen.

The telegraph facilities were inadequate, but were quickly increased, seven additional wires being run long distances. Telephone communication was also arranged for, and in less than a week the communication by wire was fairly adequate for the demands of the service.

During the entire period that the camp was occupied the railroad company moved in commands 35,381 men, 4,465 freight cars (not including live stock) and 14,750 horses and mules.

Unless one has had some experience in handling troops equipped for service, it is difficult to appreciate the magnitude of the details. To move a cavalry regiment requires 55 stock cars, 18 box cars, 12 flat cars, and 26 coaches; a total of 111 cars, twice as many as are required to move Barnum's circus. To move an infantry regiment requires 18 box cars and 26 coaches. As a rule, regiments move by railroad so infrequently that the detail of loading and unloading is not well in hand, and the delays in loading and unloading are often serious, when taken in connection with prompt train movement. There are, however, some notable exceptions; in some cases cavalry regiments were loaded and unloaded with the precision which is characteristic of the organization of a well-equipped and well disciplined body of men.

The Long Island Railroad Company had no contract with the Government at any time during the camp, nor has a contract been signed up to the present writing. The only arrangement was a general talk. This specifically covered the question of water transportation, and it was expected by the railroad company that a large amount of the Montauk business, both taking troops to that point and taking them away, would be done by transports and Government vessels. No restrictions whatever were considered, either in the handling of supplies or of troops. The Government officers were at perfect liberty to do as they thought best. According to the plans, as originally talked, the railroad company was to handle no cavalry regiments or troops in large commands. In fact, the company at first refused to allow the establishment of a camp on its property at Montauk, and finally consented only as a public duty.

Superintendent Potter speaks highly of the zeal and energy with which his men, both regular and temporary, performed their unusual and arduous duties, and also of the untiring efforts of the Government officials to facilitate all transportation work with which they had to do.

Some train and traffic statistics follow, showing the business to and from both the state camp at Hempstead (Camp Black) and the United States camp (Camp Wikoff) at Montauk:

	May, '98.	Aug.-Sept., '98.
Number of miles worked, double track	112	112
Number of miles single track	289	289
Number of engines in service	137	183
Number of passenger cars	482	623
Daily movement of schedule trains	665	1,207
Average daily movement of extra trains	24	139

Troops to and from Camp Black, April 29 to Sept. 15: To camp (officers and men), 12,897, requiring 331 coaches; from camp, 15,011, requiring 476 coaches. Total movement of officers and men, 27,908, requiring, besides the 807 coaches, 447 freight and baggage cars. The greatest number of men moved on any one day was on May 2, between 9 a. m. and 4.55 p. m., 7,363, requiring 160 coaches and 17 baggage cars.

On April 29 the road was officially notified that eight regiments of New York militia would be moved from New York to Hempstead Plains on Monday, May 2; the first regiment being scheduled to reach Long Island City at 6 a. m. The first regiment did not arrive until 9.10 a. m., and between 9.10 a. m. and 4.45 p. m. the entire eight regiments were transported from Long Island City and Brooklyn to Hempstead Plains; the last train of soldiers arriving at the camp ground at 4.55 p. m. and the last car of baggage at 6 p. m. The railroad company erected at Camp Black on short notice nine buildings, covering an area of 10,700 square feet, and laid 6,703 ft. of track, using 9 switches and frogs.

The Camp Wickoff traffic, from Aug. 8 to Sept. 12, amounted to 9,350 officers and men eastbound, requiring 310 coaches. Westbound, there were carried by special trains 13,031 officers and men, requiring 731 coaches. The approximate number of officers and men carried on regular trains with other than Government transportation was 13,000, requiring 341 coaches. Total movement of officers and men, 35,381. Number of loaded freight cars moved from New York to Montauk, 2,110; Montauk to New York, 257; number of empty cars, Montauk to New York, 1,651. Total movement of freight and baggage cars, 4,018. The movement of freight to Montauk included 7,750 horses (the horses for seven cavalry regiments) and about 1,000 mules. The movement of horses from Montauk was about 6,000. Total, 14,750 horses and mules.

The largest number of special trains engaged on any one day in moving troops was 18. During the entire period trains were furnished promptly, and on only two occasions were troops delayed waiting for transportation. On both of these occasions the notice for transportation was not given until the day following the one on which the troops were to move. Trains were in readiness and in waiting for troops from four to twelve hours, with two exceptions, when the regiments moved within 30 minutes of schedule time. In the entire freight movement to Montauk only two cars were set out short of destination, on account of necessary repairs.

An average of 200 loaded cars stood on the terminal tracks at Montauk for two weeks.

While the location of the camp at Montauk was under consideration by the War Department for a number of months, no official notice was given to the railroad company, definitely settling the matter, until the afternoon of Aug. 3.

The cavalry regiments commenced to arrive at Montauk on Sunday, the 7th.

While the unusual pressure of traffic on a single track road produced some delays, as compared with a normal movement, regular trains were kept on time and there were no excessive delays; and accidents were not serious, amounting altogether to less than $500.

A summary of the Government business at both camps shows: Total number of men handled in commands, 63,289; total number of freight cars and baggage cars loaded with supplies for commands, 4,465; total number of coaches in moving commands, 2,188.

In addition to this there has been a large movement of individual soldiers.

Economy in Railroad Equipment Painting.*

I can turn to my books and find such sums as $53.38, $54.40 and $72.20 for painting locomotive tanks in 1878, the former being for freight engines; and nobody kicked. To-day the B. & M. tanks cost to paint not much over $15 each, and a whole engine for about $50.

It is the same with passenger coaches; outward show has given place to the most severe plainness. Decoration has been dispensed with, except on parlor, sleeping and private cars, and even there used in great moderation—and plain striping has taken its place, if any is put on at all. Letters and numbers are not now shaded, where, in the years gone by, they were thought incomplete unless so finished; and often they stuck out too near the telegraph poles, or would require screws to hold them on the car. Surfacing has been largely compromised. A car that used to cost $300 to $600 to paint is now done for $125 to $200; and a better car it is, too, most every way. Then it used to take about three months to paint a car in those good old times; we do it so much quicker now that we can let the company have it in three weeks or less to earn money with the remaining nine weeks, or more, and I am not able to discover much difference in the durability. Our dark colored cars are much cheaper painted and easier maintained than were the yellow ones, and are just as durable apparently. Nearly all the current economies in car and locomotive painting I shall have to admit that I believe in, if wisely applied, though, doubtless, some of them are open to question; and this is what this meeting is for, to discuss them, and I hope you will not be backward in doing so. Railway equipment has not suffered to any appreciable extent in the practice of past economies, though it has cut into the trade of the painters somewhat; yet the public is as well if not better served. Unquestionably the time has come when the cultured traveling public thinks more of a good, smooth, clean panel of some rich wood, well finished, than they do of tawdry ornaments poorly executed.

Though most every large competing through line has its fancy rival train, which is made an exception, the bulk of its equipment is subject to the following treatment:

1. Economical equipment painting can only be done in economically managed shops. Such should, as far as space and facilities will permit, prepare its own materials; or, at least, mix them from the raw. A shop that buys everything ready to apply to the work, with the exception of a little thinning, will pay a round sum to middlemen and be ignorant of what it contains. Nothing used by railroads offers the chance for fraud and deception like paint stock in a mixed state, and the painter must be constantly on the alert for its detection.

2. Economical car and locomotive painting requires that a good surface shall be obtained with as few surfacer coatings and as little labor as possible. Elbow grease, so-called, costs most railroads about as much, if not more, than their varnish, and the durability of the work is largely in the latter. But do not make the mistake here or elsewhere that values are always measured by the dollars and cents paid for them. A railroad that cannot afford a good surface on its now plainly painted passenger cars should quit carrying passengers and confine itself to the appropriate business of hauling sand or cattle. A smooth car or engine is easiest kept clean. Pullman is the most practical and economical color for passenger equipment.

3. What is known as the four-coat, or enamel process for coach exteriors, has been weighed in the balance of economy and found wanting. The handwriting of its fate was seen on the wall by some of us some time ago. No other scheme of outside car finish is destined to long supplant durable painting economically done.

4. Gold, or aluminum, leaf for striping and lettering is more economical than two coats of imitation paint, which latter some roads are still using. The time used in applying the paint nearly, if not more, than off-sets the price of the gold, to say nothing of the cheap aluminum. Besides, the leaf looks better.

5. Useless lettering should be abandoned. A large road in New England at last accounts was still marking its caboose cars "Caboose, No. 999," in large letters shaded in two or more colors. What for? Other roads letter baggage cars "Baggage" in large shaded letters. The same reasons for discarding the practice apply in this case. Another road marks its mail cars in large gold letters, "United States Railway Mail Service." Now most everybody in this country knows what "U. S." means, and some say Spain has lately found it out. It is all "rot" to put on anything but plain "U. S. Mail." Again, some large roads still stick to the practice of putting the word "and" on their passenger car letter-boards, when the character "&" would do just as well and look much better. This is a saving of four letters per car which, at a fair price of 10 cents per letter for labor, on a road with an equipment of 1,200 cars, would be a saving of $480 for labor, to say nothing of the leaf used. It is also a question whether some roads would not better follow the example of others and substitute the number for the name of the road on their engine tanks.

6. The style of lettering and decoration adopted has much to do with economy in car and locomotive painting where this kind of work is done with a brush. Too often it emanates from the draughtsman's room where a thing stuck out with a rule, square and pen is easier done than with a brush. Years ago, a master car builder, now dead, charged the writer with putting too much work on an old car, because it was circular or off-hand work. He was at once informed that painter's work was the reverse of carpenter's work in this regard, where square work is the cheaper and circular the dearer. For this reason square corners should be avoided as much as possible in letters, figures, or stripe designs, unless to be stenciled. Off-hand styles are the most graceful to the eye and the least expensive to execute.

7. Two or three coats of finishing varnish, one over the other, without rubbing, is the economical method of finishing car exteriors; and leaving the interior with a gloss is satisfactory to the traveling public. It comes down naturally to a dull finish without cost in a year's wear; and car interiors should not be varnished, as a rule, oftener than once in three years. The rubbing of all car interiors to a dead finish, after varnishing, is a great and needless expense, to be avoided by every well-managed road. It is a question of $15 to $25 per car saved.

8. Iron car-seats are most economically maintained with an occasional coat of enamel or varnish-color, rolling the raised parts with bronze, if preferred. The painting of the entire seat with bronze is a needless expense, requiring repeating each year.

9. One plain color inside of baggage and like cars, and no striping on their outsides, save possibly on letter-boards at ends of letters, is in line of good sense and economy.

10. Car floors, foot-rests, pipes and covers and stiffener-planks are best taken care of with a coat of paint of the same color, when shopped for varnish. Floors and foot-rests used to be shellacked at a cost of about $2.50 to $3 per car for material, against about $1 now for paint.

11. Passenger trucks should be sprayed with varnish-color over the old work, or over priming on new work. Steps to be done with same material with a brush to avoid besmearing ends of cars. Here is a saving of more than 50 per cent. for labor. Much of the underwork and trucks of locomotives and tanks can also be successfully sprayed with black varnish. Also freight equipment with brown mineral paint, the iron work of which is done with the same color and no blacking done.

12. The interiors of cabooses, mail-rooms, and milk car offices are most economically maintained by painting plainly with an ash or oak color without graining, with appropriate ceiling colors, and all varnished. Graining is a needless expense. Exteriors of cabooses should be painted in oil, and not varnished.

13. Maintaining natural wood finish on car exteriors is not economy. Sashes should be painted and grained in distemper to mahogany color and varnished. End doors are better painted and striped to match body of car.

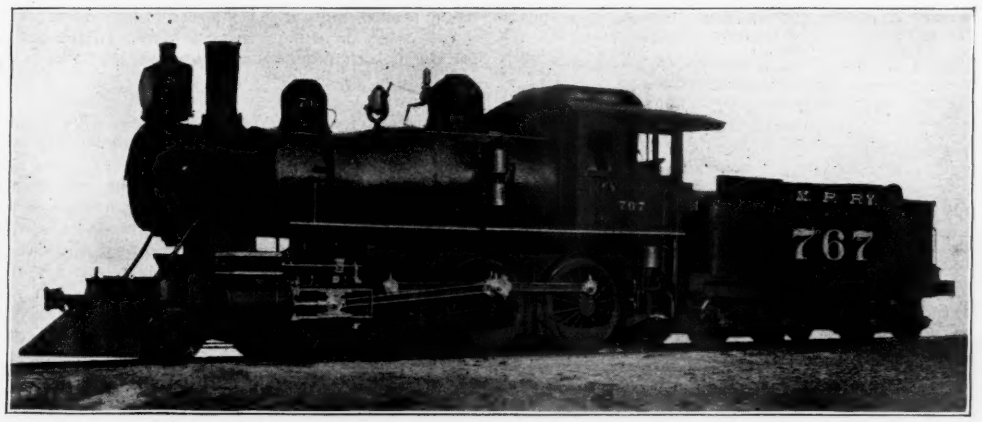
14. Finally, I am of the opinion that, with a good, permanent, living schedule of prices, railroad equipment is the most economically and equitably maintained, alike fair to employer and employee, by the piece-work plan instead of the day system.

* Extracts from a paper by Mr. Charles E. Copp, General Foreman Painter, Boston & Maine Railroad.—New England Railroad Club, Oct. 11.

Cooke 10-Wheelers for the Missouri Pacific.

The engraving, from a photograph, gives a general view of the appearance of the 10-wheel locomotives which the Cooke Locomotive & Machine Co. is now delivering (10) to the Missouri Pacific Railway. These engines have the Houston sander, Na-

than triple lubricator and injectors, Latrobe tires ball bearing bell stand, Westinghouse-American brake, Franklin asbestos board covering for boiler lagging, cast steel driving wheel centers and driving wheel boxes; cast steel eccentric straps lined with babbitt, steel tired engine truck wheels, steel tender frame, Curtis swing head coupler on tender and Janney pilot coupler arranged to swing up out of the way the same as the Leeds coupler. Other particulars follow:



Cooke Ten-Wheeler for the Missouri Pacific Railway.

Ten-Wheelers for the Missouri Pacific.

Gage	4 ft. 8½ in.
Total weight in working order	143,600 lbs.
" " on drivers	107,700 lbs.
" " on truck	35,900 lbs.
Total wheel base of engine	23 ft. 4 in.
Driving wheel base	12 ft. 6 in.
Wheel base of engine and tender	50 ft. 7½ in.
Cylinders	20 in. x 24 in.
Driving wheels	60 in. dia.
Engine truck wheels	30 in. dia.
Driving axle journal	8¾ in. x 10⅝ in.
Engine truck axle journal	6 in. x 12 in.
Boiler	Radial stays; extended wagon top
" working pressure	200 lbs.
" dia. first course	60¼ in. dia.
" firebox, length	102⅛ in.
" " width	40⅜ in.
" style of grate	Rocking
" tubes, number	276
" " dia. and length	2 in. dia., 13 ft. 5 in. long
" thickness of shell	⅝ in. and ½ in.
" heating surface tubes	1,926 sq. ft.
" " " firebox	158 sq. ft.
" " " —total	2,084 sq. ft.
Grate surface	29 sq. ft.
Slide valve	Richardson balanced
" " travel	5¾ in.
Steam ports	1½ in. x 20 in.
Exhaust ports	3 in. x 20 in.
Lap	⅞ in., outside
Exhaust pipe	Single nozzle
Smokebox	Extended
" netting	4 mesh, with diaphragm plates and Petticoat pipe, M. M. St.
Center of boiler from rail	8 ft. 6 in.
Top of stack from rail	15 ft. 0 in.

Tender.

Frame	10-in. channels
Truck	Diamond, with steel bolster
" wheel	33 in.
" axle journal	4½ in. x 8 in.
Tank, wter capacity	4,000 gals.
" coal "	8 tons

A Miracle on the New York Central.

In the September number of The Pelican, a Catholic monthly published at St. Gall, Switzerland, there is a paragraph entitled, "Two Railroad Trains Rushing Together Arrested by the Virgin Mary," which, as it refers to American trains, may interest our readers: "One day the New York express was some hours late, but through mistake it was not signaled. On the same line a freight train was running on schedule time. On the latter there were 12 or 14 persons. They knew that the express was behind time, and were much concerned lest there should be a collision. But an old weather beaten brakeman stood up and said, 'So long as Dominick (the engineman) keeps one hand on the lever and holds the rosary with the other, we shall certainly meet with no accident.' Scarcely had he made this remark when the express train, with more than 100 passengers, came rushing around a curve toward the freight, which also was running fast. A frightful accident seemed inevitable in an instant, and as the two trains approached nearer and nearer to each other every second the passengers were filled with anxiety. But our Dominick calmly repeated an Ave Maria on his rosary to the Christians' helper with the deepest devotion. At once both trains stood still, as if by magic, only a few steps apart. To show himself grateful for this manifest assistance of the blessed Mother of God, Dominick soon afterward entered the Order of St. Dominick. Later the former engineman was consecrated a priest, as which he died some two years ago in his cloister at Somerset, in the state of Ohio, in the repute of sanctity." Should any of our railroad companies be moved by this history to equip their locomotive cabs with rosaries, we beg them to observe that Dominick kept one hand on the lever while the other was on the rosary; and if it is true that "God helps him who helps himself," so we may believe that rosaries and power brakes and block signals will be effective in preventing accidents.

Thomas' Switch Movement.

Mr. J. W. Thomas, Jr., Assistant General Manager of the Nashville, Chattanooga & St. Louis, has designed a switch stand which has a spring connection with the rails at all times, and a rigid connection while the rails are being moved. The rigid connection is worked by an auxiliary lever (marked 6 in the drawing), this auxiliary lever being rigidly connected with the main lever whenever the latch of the latter is pulled up. The spring, as used in the Lorenz switch, is objected to because the spring can be compressed and the lever latched while there is an obstruction between the points and the stock rail. The objection to switches without a spring is that should a train trail through them when wrong, they are left in a dangerous position for a train facing them. By making a stiff connection while the points are being operated, they must be "home" before the lever can be latched. The stiff connection is broken when the lever is latched and so leaves the spring free to force the points to their proper position should a train trail through them when they are wrong.

The stand, as illustrated, has two levers, one being used to operate a distant switch signal. Fig. 1 is the distant signal. Fig. 2 shows details, described further on. Fig. 3 shows the levers in their normal position, but latch 9 of lever 2 (See Fig. 2), raised and engaged with notch 8 of lever 6, preparatory to handling the switch with the stiff connection.

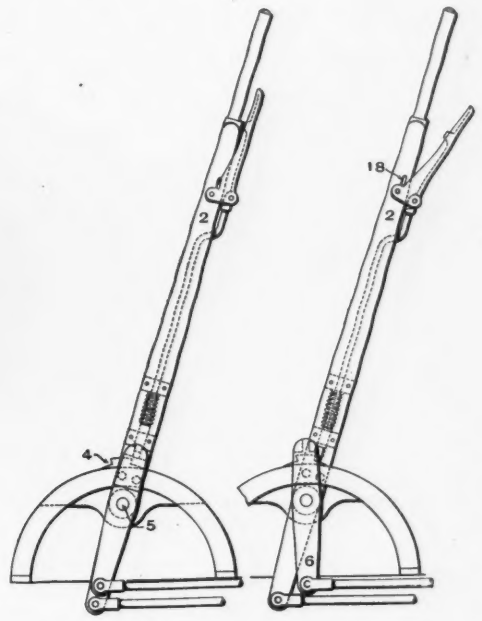
Fig 4. shows lever 2 in its normal position, the short lever (6) in the position it assumes while a train is trailing through the points when they are wrong.

Fig. 5 is plan of stand and switch, with connections.

Fig. 2 snows that side of lever 6 which goes next to lever 2. The notch in the upper end of lever 6 engages latch 9 of lever 2.

In Figs. 2 and 5 there are two operating levers, No. 1 and No. 2. Lever 1 operates the distant switch signal and No. 2 the switch. A third lever can be added to operate the switch target, 30, Fig. 5, but it has been found quite satisfactory to have the switch target coupled direct to the rails.

Levers 1 and 2 are latched in quadrant at 4, and are pivoted at 5. On pin 5 is also pivoted the short lever, 6. The lower end of this lever is connected to the switch rail at 7, this connection being a rigid one. The upper end of lever 6 is provided with notch 8. When latch 9 of lever 2 is raised it engages with this notch, and a rigid connection is established between the switch lever and the rails. If lever 2 is now reversed and there should be an obstruction between the points and the main rail, it would be impossible to latch the lever in its reversed position. The lower end of lever 2 is connected to the points by means of spring rod 14 (Fig. 5). Should a train trail through the points while they are wrong, spring 15 would be compressed, and as upper end of lever 6 would be disengaged from latch 9 of lever 2, lever 6 would be free to move and would assume the position shown in Fig. 4. After train passed, spring 15 would force the points back to their place and lever 6 would assume its original position. It will thus be seen that when lever 2 is latched in either its normal or reversed position we have but one connection with the switch, i. e., a spring connection; but the moment lever 2 is unlatched, we have two connections between the stand and the switch, one a rigid or stiff connection and the other a spring connection.



Figs. 3 and 4.—Thomas' Switch Movement.

Levers 1 and 2 are interlocked by means of pointed pin 10, Fig. 2. Each lever has a countersunk hole, properly located, in which the pin engages, it being so arranged that it is impossible to move lever 2 from its normal position until 1 is fully reversed, the reversal of lever No. 1 putting the distant switch signal at caution, showing that the switch is either unlocked or set to the siding. The starting of lever 2 from its normal position locks lever No. 1 in its reversed position, lever No. 1 remaining so locked until lever No. 2 is latched in its normal position again. The levers have slots (18, Fig. 4), through which passes a key having the necessary chain and padlock.

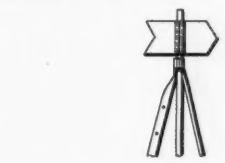


Fig. 1.

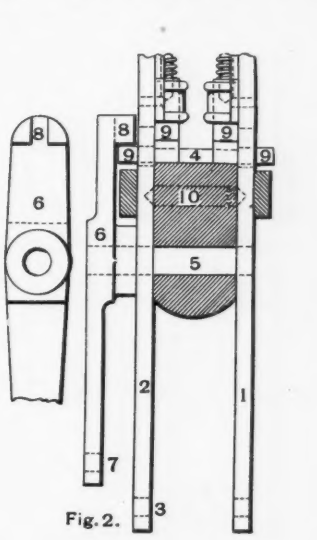


Fig. 2.

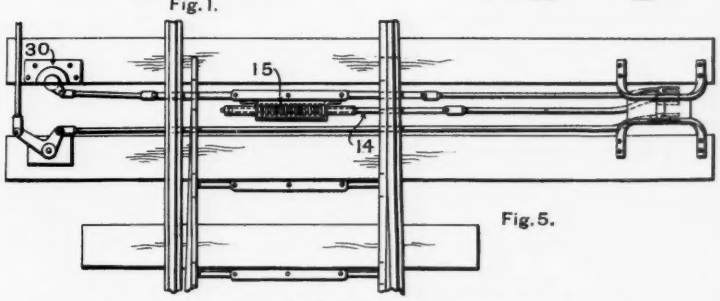


Fig. 5.

Figs. 1, 2 and 5.—Thomas' Switch Movement and Switch Signal.

Fig. 6 shows distant switch signal proper, which is in use on the Nashville, Chattanooga & St. Louis, in conjunction with this stand; 25 is the bottom casting, bolted to the foundation; 26 is the top casting, to which the target rod is attached. This casting is provided with arms, 27, 28, to which the front and back wires can be attached. Both castings have inclined surfaces, the lower part of 26 fitting into 25, so as to act as a guide for the lower end of the target rod. Should a wire break casting 26, target rod and target drop of their own weight, the inclined sur-

faces turning the target a quarter of a turn, thus making the signal automatic, in that it goes to caution if the connections holding it to safety are broken. The distant switch signal is shown with two wires, but it has been found necessary to use only one.

The Metric System.

At the fall meeting of the American Railway Association, held in New York City this week, the committee on the metric system, W. F. Allen, Chairman, presented a report calling attention to the changes that may possibly be made necessary by the new commercial relations with distant countries which this country is to establish in consequence of the war with Spain. The report says:

"It is claimed that unless our manufacturers make their goods according to the metric weights and measures they will be handicapped in their competition for foreign markets. If there should be a general demand for the change to the metric system it would be important that our railway officials should know what it would be necessary for them to do in making the change. Your committee has, therefore, under consideration a plan by which it hopes to be able to report upon the methods which it would be necessary to employ in the introduction of the metric system in each railway department."

Fig. 3.—Plan of Spider Rods and Section of a Wheel.

As throwing light on the methods employed in other countries when the metric system was adopted, the committee quotes from a paper by Edward Grafstrom in the September number of the American Engineer. Mr. Grafstrom says:

"The writer has had the fortune, or perhaps the misfortune, to live successively in two countries during such periods of transition, and for the purpose of illustration it may be interesting to relate the developments connected with the evolution. The time allotted for the purpose was in one case 10, in the other eight years. Each one of these countries was, up to that time, following a system of foot and pound but slightly varying from the English standards.

"The first indication of the advent of a new system came from the schools, the educational branch being under full government control. In the primary schools the children were taught the metric system before the intricacies of the old system were explained, and in the higher grades and colleges mathematical examples were worked on the metric basis. Within a year enterprising publishers put on the market metric editions of mathematical and other text books affected by the change. The new idea took root at once and throve in the fresh minds of the pupils, and later when these thousands of adherents to the new system were turned out in the world, year by year, the popularity of the system was assured. But the great mass of people, who were already beyond the reach of the school, had to be converted in the meantime.

"The next step was in the form of an object lesson. On all the government railroads the distances were remeasured and kilometer posts put up in addition to the old mile posts. On station buildings the distances in kilometers were added. In the country districts such public highways as had old mile posts were next supplied with new ones, leaving the old ones undisturbed. These steps gave the traveling public, the railway men, the farmers, opportunities for comparison and reflection.

"About this time new foot rules, weights and scale balances, graduated on both systems, also began to appear, and advertisements in the form of calculated converting tables and mechanical converters were freely distributed. People began to be educated up to the point of change.

"The following year all applicants for positions in the civil service were required to be thoroughly familiar with the metric system, and private employers soon followed lead. The system began to be tested. People bought silk and ribbons by the meter in the dry goods stores, coffee and tea by the kilogram in the grocery, and called for a liter of beer at the restaurant. It soon became a fad. You were not up to date if you didn't handle the metric system with perfect familiarity. Four years had passed; not a single compulsory step had been taken to inconvenience the public, and yet from all outward signs the country was on a meter basis.

"The next step was to put the postal, railway and custom tariffs on the same plane. When they were introduced there was no confusion or interruption; they fitted right in with the situation, and everybody understood them and was expecting them.

"So far no change had apparently been made in the manufacturing industries. Dimensions of new machines and tools began to be evened up to avoid fractional millimeters wherever possible. Screw taps and reamers were named after their nearest metric size, but master gages and test blocks were not, as a rule, interfered with. The rolling mills altered their rolls imperceptibly as new ones were needed. There was no abruptness, no interruption, and the extra expenditure was compensated for by the time saved in making calculations and estimates, or in keeping shop and material accounts. Before the period of transition had expired the metric system had infused trade and commerce, and become part of the national life."

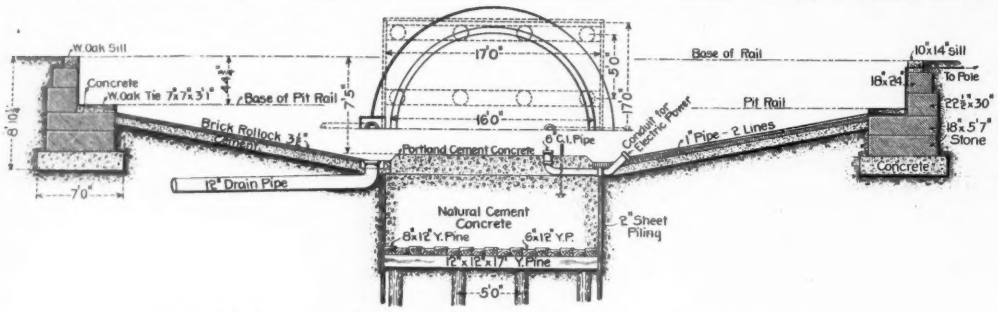


Fig. 1.—Pit of the Erie Railroad Electric Turntable at Jersey City, N. J.

Electric Turntable for the Erie Railroad.

An electric turntable, the first of its type installed (of course not the first one to be driven by electricity), has been working successfully for more than two months at the Jersey City yard of the Erie Railroad, turning from 175 to 225 locomotives a day. It is, in effect, a small drawbridge, the essential difference being that the table seesaws over the center. This rocking motion serves to balance the locomotives over the center and thus avoid the friction of the end wheels on the pit track during the turning, they each being about three-quarters of an inch above this track when the table is horizontal. This balancing is effected by means of two transverse pins like the trunnions of a gun. Since the girders, and consequently these pins, are 6 ft. from center to center, the table is rigid against side throw or any motion other than this vertical rocking, excepting when its supports move. These supports rest upon a drum, which in turn bears through its cast steel shoe upon 32 cast iron wheels (Fig. 3), forming an ordinary "live ring," as shown in Fig. 7. This ring runs upon a cast steel track, and the whole forms the carriage. While the table has only a seesaw motion, the carriage has only a circular one in a horizontal plane. This is essential in order that there may be a true engagement between the pinion and the rack circle.

The 15 h. p. series-wound motor, the position of which is shown in Fig. 5, is placed directly on the drum between the small supporting girders. In the design for the motor equipment it was necessary to keep the motor in a fixed position relative to the gears, so that their alignment would not be changed by the tilting movement as the locomotive comes on the tracks of the table. A pinion at the upper end of the armature shaft of the motor engages in a gear set at the upper end of a shaft running in the axle bearings of the motor. At the lower end of this shaft is another pinion engaging in a gear set midway on a third shaft, at the lower end of which is keyed a pinion which engages in the stationary rack shown in Fig. 2. Besides the above, the electrical apparatus consists of two controllers, a magnetic blowout, automatic overload circuit breaker, two lightning arresters, two fuse boxes and fuses, and one main switch. The necessary resistances for the electric current are placed below the wooden sidewalks of the turntable. The wires which carry the current are taken underneath the turntable (Fig. 2), and up through the hollow cast center. Each end of the table has a controller with a reversing mechanism.

The current is taken from the 500-volt power circuit of the Jersey City Electric Light Co. through a Thomson recording watt meter, and is brought to a pole near the turntable. On this pole is a box containing the protective apparatus and switches, one M.M. circuit breaker with magnetic blowout, a 75-amp. double-pole switch and two M. D. magnetic blowout lightning arresters, one on each conductor. Locomotives are turned end for end, that is, through 180°, but the power is only applied through the first 30° or 35°. Through the remaining distance the table swings of its own momentum and is brought to a stop at the proper point by a band brake shown in Fig. 5, working on the intermediate shaft. This brake is applied by means of a lever (shown in Fig. 7), one being placed at either end of the table. It is desirable for the operator to be at the end of the table where he can see the tracks and all his work. When a locomotive is turned he walks to the other end and works from that point. This saves the power that would otherwise be required to turn the empty table through 180° and is the reason for the existence of the second electric controller.

The tongue of the end latch, Fig. 7, is pivoted, and is provided with two springs working laterally to take up the jar of stopping. When released by the operator, the box at the end of the table is pushed forward by a third spring until the tongue presses against the catch angles placed between the rails of the fixed or approach tracks. When the rails of the turntable track come to the proper point this catch is forced quickly forward into a slot provided for it in

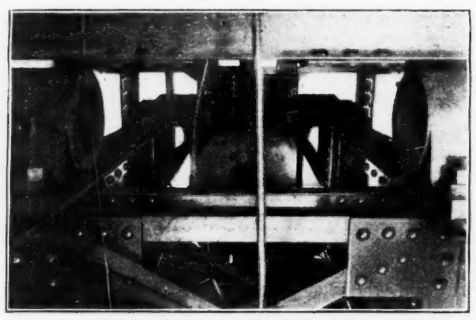


Fig. 8.—Inside Trunnion Bearings, Motor and Driving Gears.

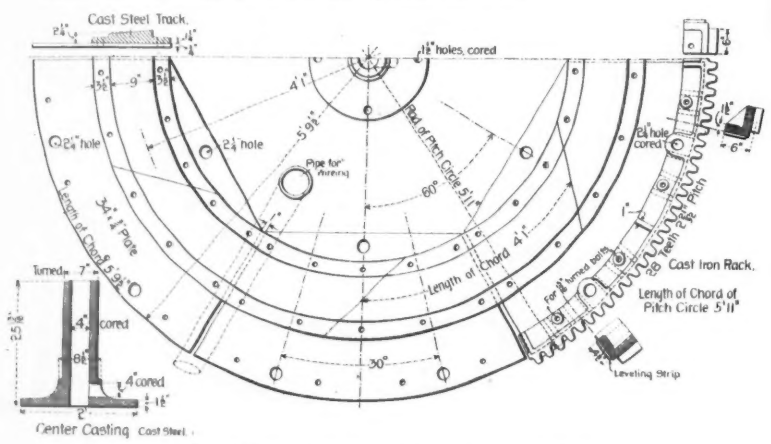


Fig. 2.—Bed-plates, Track, Cast Center and Rack Segments.

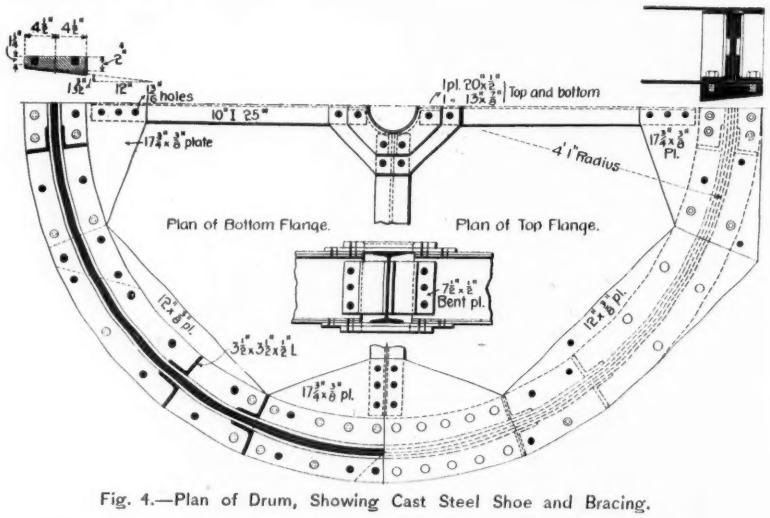


Fig. 4.—Plan of Drum, Showing Cast Steel Shoe and Bracing.

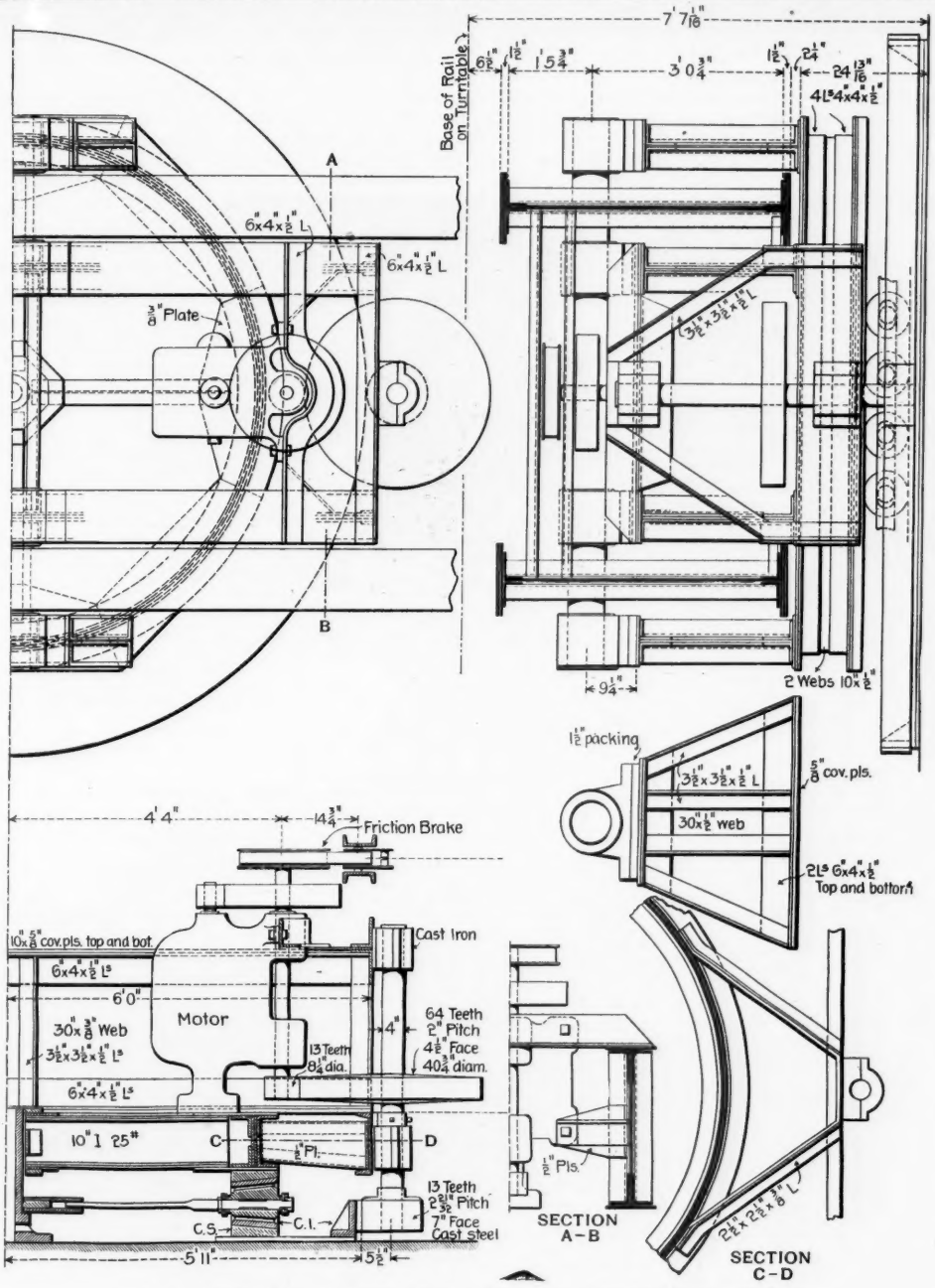


Fig. 5.—General Plan of Center, Electric Turntable—Showing Motor and Gears.

the catch angles. The man who controls the movement of this turntable has become skillful in applying only as much power as will swing the table the proper distance. The band brake, however, enables the one controlling its movement to bring the table to a stop at exactly the desired point.

The table has top and bottom lateral bracing between the girders, as shown in Fig. 6. Cross frames are placed about every 6 ft. This provides a rigid and well braced structure, and this element of strength is very essential in a table working at the speeds which this one attains.

In order to relieve any excessive lateral strains on the central bearings, cast iron buffers, shown in the half plan of the bottom view, Fig. 6, are riveted to the main girder and corresponding buffers are fixed to the drum.

The surface of the new yard being raised above the existing surface not much excavation was necessary at the pit. Figs. 1, 2, 3 and 4 give the successive steps in building up the main parts of the table. Fig. 8 is an engraving from a photograph taken directly under the table and shows clearly the large central bearings, the motor and other driving machinery.

Locomotives are reversed in ¾ of a minute, and 40 could be handled in an hour. The actual time required by an engine to go from the train shed (about 500 yards from the table), be turned and leave the table is about 2½ minutes. At certain hours of the day they follow one another in quick succession, but are handled with no appreciable delay. Some questions of the economy of using electricity for this service are considered briefly on the editorial page.

This turntable was designed by Mr. Mason R. Strong, Assistant Engineer of the Erie Railroad, under the direction of Mr. Chas. W. Buchholz, Chief Engineer. The detailed plans were made by the builders, the New Jersey Steel & Iron Co. of Trenton, N. J., and approved by the railroad engineers. The railroad company erects all its own bridges and this turntable was not an exception, the erection being in charge of Mr. J. H. Watson, its inspector of bridges. The electrical apparatus was furnished and put in place by the General Electric Company.

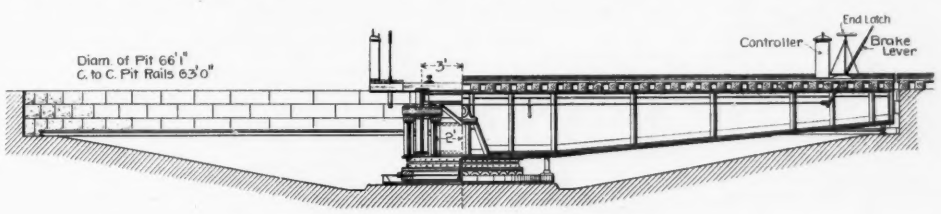


Fig. 7.—General View of Electric Turntable and Pit.

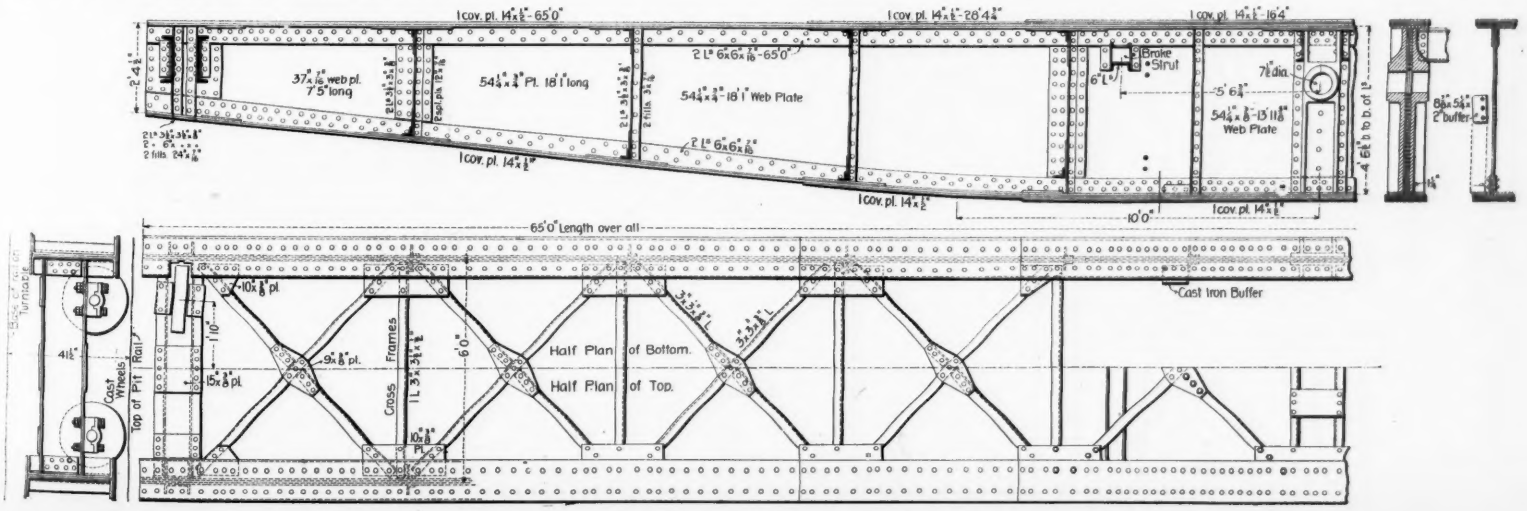

1 cov. pl. 14"x1/2" - 65' 0"
1 cov. pl. 14"x1/2" - 26' 4 1/4"
1 cov. pl. 14"x1/2" - 16' 4"
2' 4 1/2"
37 1/16" web pl. 7' 5" long
54 1/4"x3/4" Pl. 18' 1" long
2 L's 6"x6"x7/16" - 65' 0"
54 1/4"x3/4" - 18' 1" Web Plate
Brake Strut
6' 1" c. to c.
7' 1" dia.
5' 6 3/4"
54 1/4"x5/8" - 13' 11 5/8" Web Plate
4' 6 1/2" b. to b. of L's
8 3/4"x5 3/4" Buffer
1 cov. pl. 14"x1/2"
1 cov. pl. 14"x1/2"
10' 0"
1 cov. pl. 14"x1/2"
65' 0" Length over all
Cast Iron Buffer
Top of Pit Rail
Cast Wheels
4 1/2"
10"x1/8" Pl.
1' 10"
9"x5/8" Pl.
15"x5/8" Pl.
Cross Frames
1 L 3"x3"x1/4"
6' 0"
Half Plan of Bottom.
Half Plan of Top.
3"x3"x1/4" L
10"x1/8" Pl.

Fig. 6.—Plan and Elevations of Girders, Showing End Wheels.

A Railroad Police and Some of its Work.*

Last year there was a very interesting book brought out by a Frenchman on "The Mob." In it the author undertook to examine the human will, and he makes this observation in regard to it: "Everything goes down before the determined will, nature and gods and man." Those of us who have grown up in the service of the Pennsylvania Lines came early to recognize that the gentleman who has presided over your deliberations and who counsels us in our law matters had a determined will. Under the influence of that will certain practice on the Pennsylvania Lines began to take shape and form and character. As we came to know something of his manner we found it necessary to study somewhat his method, and we early learned also that he had found out that in order to convince people it is not necessary to argue with them, but that it is quite sufficient if you lay before them facts. That is to say, the orderly presentation of the facts constitutes in itself an argument far more conclusive than a statement adorned with the flowers of rhetoric or embellished with analogies. So that, as our Assistant Counsel began to analyze the losses to the company on account of personal injuries and to make known their causes, we began to patch up the holes in our platforms, to take down the obstructions that endangered the lives of the men on the tops of the trains, to make our brake wheel shafts out of the solid rod, and to make one improvement after another.

In the analysis that is made of personal injuries we find our losses divided into injuries to passengers, to employees, to travelers on the highway and to trespassers. The injuries to passengers in the United States are about four and one-half times as great as the injuries to passengers in Great Britain, but the means that have been taken in Great Britain to reduce accident are so costly that the interest on the investment there maintained and the increased cost of operation, if divided by the number of lives that may be said to be saved by these appliances, represents $288,500 for each life saved. Whether or not in a growing community, the success of which is absolutely dependent upon cheapening the methods of transportation, we can afford to take on ourselves any such burdens as the English people have taken upon themselves is very well worth serious consideration.

In the matter of injuries to employees, it seems to me that some effort ought to be made by your Association, if you will pardon the suggestion, to separate

* An address by Mr. L. F. Loree, General Manager Pennsylvania Lines, at the ninth annual meeting of the Railway Claim Agents.

the accidents that are incident to the business as a method of transportation and the accidents that are incident to the business as a manufacturing establishment, i. e., I take it, there is a distinct line of demarkation to be drawn between the accident that happens to a brakeman in coupling cars and the accident that happens to a house carpenter in shingling a roof on one of our stations, and a very large part of the accidents that bring railroads into disrepute and that hold us up to the public as a great engine of destruction, are the common kind of accidents that happen in any mechanical pursuit; but the public knows no such difference, and the public ought to be made acquainted with the facts.

In the matter of accidents to travelers on highways, with the vast number of grade crossings that exist and are constantly making, there seems but little hope for the future. Here and there one that is particularly dangerous may be eliminated, but if it is done it must be done with the hearty co-operation of the community.

In the matter of accidents to trespassers, while they are the smallest of the four classes of claims, the amounts paid out are considerable. It was a great matter of surprise to me that we were paying out anything because of death and injuries to trespassers, but payments have to be made on account of the expense of inquest, hospital care and burials; not because we owe these people anything, but because unless we do these things for them we would raise up in the community a feeling of antagonism and criticism that would make itself felt in other directions. It is certainly an aggravation to be compelled to suffer pecuniary expense on account of a man who has trespassed upon your property or attempted to rob you of revenue by stealing a ride, but such are the circumstances in which we are placed.

I have seen but a few figures of the number of people who use our rights of way as common highways, but I once made a count of the people who used the right of way of the Cleveland & Pittsburgh Railroad in Cleveland as a highway and the people who used the public streets crossing that railroad as streets, and there were actually more people walking up and down the company's right of way than across it on any of the streets, and the count was kept at every one of the thirty-five street grade crossings. We found that we had no protection against these trespassers. We asked the Legislature to pass a law prohibiting persons from trespassing on our roads, and the only aid we could get was a law providing that when we warned a man to keep off our grounds and he afterward came upon them he was guilty of a misdemeanor and liable to punishment. Under that law we have destroyed the attraction of the right of way as a bicycle path and have somewhat restricted its use by pedestrians. We further secured legislation in the city of Cleveland making it a misdemeanor to meddle with crossing gates; people became impatient because crossings were closed and would throw the gates up and pass by. Under that legislation we made some twenty-five arrests and our gates are now fairly well respected.

But the particular thing I thought you might be interested in knowing is the effort we made in trying to get rid of trespassers on freight trains. I have never seen any figures as to the number of people that ride on our trains unauthorized, but I have myself counted as many as sixty trespassers on a freight train. It seemed to me in canvassing the situation that the efforts that have heretofore been made to suppress this evil have failed because, first, they were spasmodic, and, second, the number of persons arrested became so great as to inflict inconvenience and expense upon the public, thus making the movement unpopular and discountenanced by the community. So, in organizing a police service in connection with our lines to rid the property of trespassers, I expected it would probably take five years to obtain any considerable results, and that the force would have to be held back all the time to keep it from making too many arrests.

There are four classes of people who steal rides on freight trains. First, there is the man who has ample means to pay, but who wants to spend his money in a way he can see a greater return for; so we told the police to "always get the man with the watch chain," thinking that if we could make it unfashionable for the well-to-do citizen to steal rides we might work our way down to the tramps. The second class are the boys who have girls in the next town, and the young fellows who want to go to the circus in the county town and neighborhood people on errands of all sorts; they ride back and forth night and day. The third class are what the tramp calls "gay cats" and the brakeman calls "stake men," the fellow whose habits are such that when necessity drives him to work stays at work only long enough to get money to supply himself with drink and tobacco. There are about fifty thousand of these men fattening on this community between the Alleghenies and the Mississippi and the Lakes and the Gulf. They are constantly on the move and are without the respect even of the tramp. The genuine "hobo," the fourth member, is an adept as a trespasser. He rides on the brake rods and on the trucks of the passenger and freight cars or beats the "blind baggage," or rides in the cattle car, and generally he never walks when there is a freight train to be had. The average jail has no terrors for him; it is simply a dry and quiet place where he can put in two or three days of idleness and rest up. Some of the workhouses are, however, held in terror; any tramp will go south of the Ohio River to escape being sent to those in Canton or Cleveland.

It was rather astonishing to me when I got the figures together to see what a miscellaneous lot of people we had gathered up as the result of our onslaught on the vagabond community. The two tables will, I think, reward a careful study.

Charges Under Which Arrests Were Made.

Year.	Train riding.	Trespass (Ohio, 1894).	Gate ordinance (Cleveland, 1896)	Robbery.	Petit larceny.	Intoxication.	Disorderly conduct.	Vagrancy.	Destroying Property.	Stoning trains.	Miscellaneous.	Total.
1894....	117	1	..	2	14	1	1	..	6	..	2	143
1895....	687	13	..	6	26	11	21	2	10	9	15	800
1896....	2,066	43	14	18	132	43	29	23	5	11	11	2,395
1897....	4,531	119	11	19	220	119	209	186	31	16	52	5,513
Total...	7,401	176	25	45	392	173	260	211	52	36	80	8,851

Miscellaneous includes—Train wrecking, 4; pocket picking, 8; obstructing track, 1; receiving stolen goods, 7; assault on employees, 14; assault on passenger, 1; assault and battery, 10; shooting, intent to kill, 1; murder, 2; lunacy, 4; indecent exposure, 3; confidence men, 4.

1894—One division organized six months.
1895—One division organized one year.
1896—Three divisions organized one year partially.
1897—Five divisions organized one year partially.

The number of arrests from now on may be expected to fall off quite rapidly.

Disposition of Persons Arrested.

Year.	Nollied.	Discharged.	Fined.	Reform School.	Work House.	County Jail.	Penitentiary.	Escaped.	Hospital.	Asylum.	Disposition not known.	Total arrests.	Amount of fines paid.
1894.	6	10	125	1	....	....	..	1	..	..	..	143	$557.35
1895.	17	119	271	..	62	144	4	..	2	1	180	800	1,892.05
1896.	19	597	744	..	399	580	13	..	4	1	38	2,385	3,858.80
1897.	16	1,807	2,068	..	786	791	26	..	2	4	13	5,513	7,600.56
Total	58	2,533	3,208	1	1,247	1,515	43	1	8	6	231	8,851	$13,908.76

There are two things that have led to the demoralization of all police forces. It was true of the Paris police under Fouche during the first Empire, it was true of the New York police as disclosed by the investigation of the Lexow Committee, and it is true at periods of almost every municipal police everywhere. Many of the men selected for service on these forces are fit neither physically nor morally for the positions they hold. Most of them are led into the bad practice of working for reward, which in turn leads to compromise with the criminal and to living off the criminal class. We are exposed to the same danger which everyone incurs who has police service, and we have taken the utmost care in the selection of the men, both by looking up their records for five years before hiring, and by having them subjected to the same physical examination that the Government gives to men entering the regular army; we have prohibited working for reward, and have enforced the rule.

It may interest you to know what this costs us. To me it was one of the most gratifying results. Prior to the organization of the Police Service the force of special officers and watchmen on our Northwest System consisted of 115 men, and cost us $69,846.16 per annum. The service to-day consists of 1 inspector, 2 clerks, 5 captains, 13 lieutenants, 2 passenger station watchmen, 7 freight station watchmen, 11 shop watchmen, 20 yard patrolmen and 22 road patrolmen, a total of 83 men, and costs us $53,420.40 a year—i. e., we are working with 32 less men and we are saving $16,425.76. We have substituted for a class of men who were of but little use a class of men who are of the greatest use; we have rid our road practically of trespassers; we have saved money not only, as Mr. Gilbert says, to his department of claims, but we have saved money on our pay rolls, and we are discharging a duty that as one of its best and most distinguished citizens, I think we may fairly be held to owe the state.

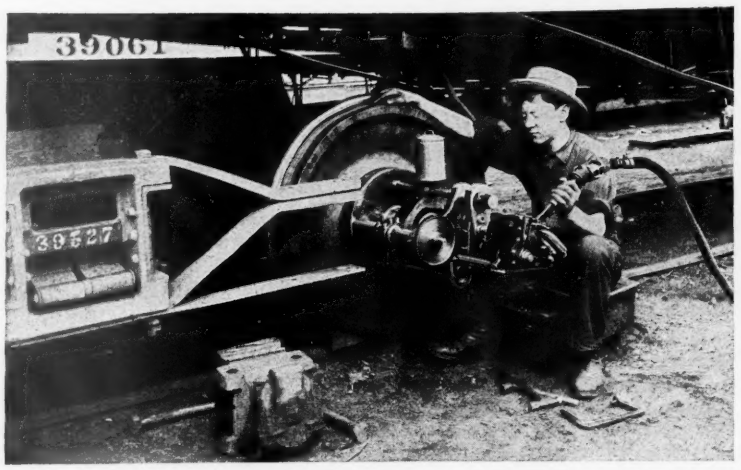


Fig. 1.—Pneumatic Car Journal Turner.

A Pneumatic Car Journal Turner.

The accompanying engravings show the construction of a pneumatic car journal turner, which has been used successfully for some time past at the Clinton shops of the Chicago & Northwestern; it is now being put on the market by the Standard Pneumatic Tool Co. under the trade name of the "Little Giant." The object of this machine is to enable car journals to be turned on the repair tracks, thus avoiding the loading of the wheels and axles, their shipment to the shops for turning and much of the expense consequent to the present methods.

This machine consists essentially of a universal chuck which is fitted to the axle next the wheel, while the opposite end is supported by a cone center which enters the center hole in the end of the axle. Power is applied by means of a motor run by compressed air, which through suitable gears drives the tool and governs the feed; the motor may also be detached and used for drilling or boring. It will be seen from Fig. 1, which shows the machine in operation, that the cars are first jacked up and the wheels moved out clear of the side frames, when the turner can be applied. The records of the Chicago & Northwestern show that it requires on an average from 25 to 30 minutes to turn a journal in this way.

Fig. 2 shows the principal details of the construction. The motor is applied to the end of the shaft A, which through a system of reducing gear (B, C, D, E, F and G), drives the two feed screws. The chuck and front frame, which carries the gears, are connected by the two standards H and J, and the lower brace K. The cone center, which enters the center hole in the end of the axle, is threaded where it enters the frame so that it can be adjusted to suit the length of the journal. It will also be noted that the main shaft, A, has a keyway throughout its length in which is fitted a feather for driving the small gear L; this gear in turn drives directly the large gear which encircles the journal and carries the tool.

The details of the carriage are shown by Fig. 3. This is guided by the two standards and actuated by the feed screws which pass through it. The carriage is in the form of a ring or strap, within which is

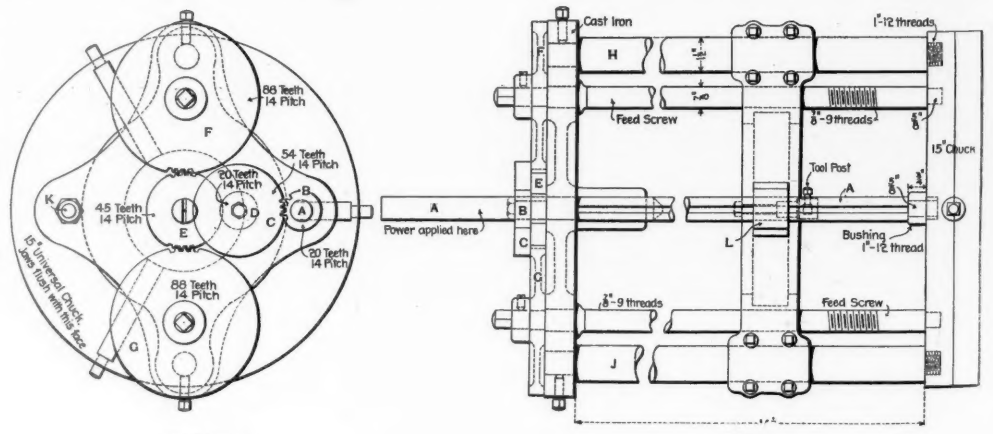


Fig. 2.—Pneumatic Car Journal Turner.

placed a large gear having a bearing at the sides and a 7¼-in. opening at the center, the outer strap being cut away at the top where the large gear meshes with the small driving gear; the tool post is fixed to the side of the large gear which surrounds the journal when in use. It will be seen that the tool can be readily adjusted and that true centering of the machine is assured. The work which can be done with this machine is said to equal in all respects that of the best lathe work.

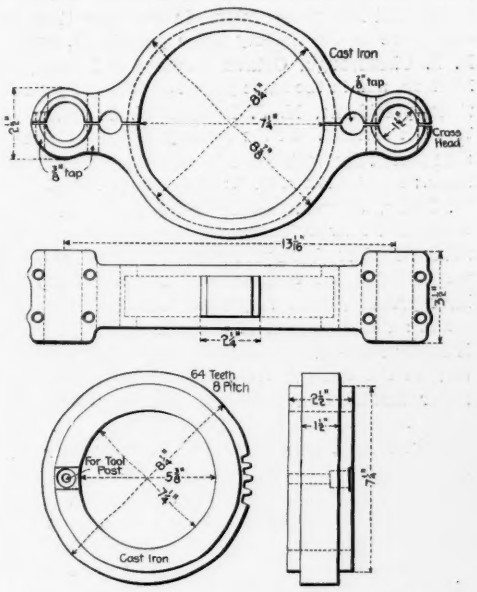
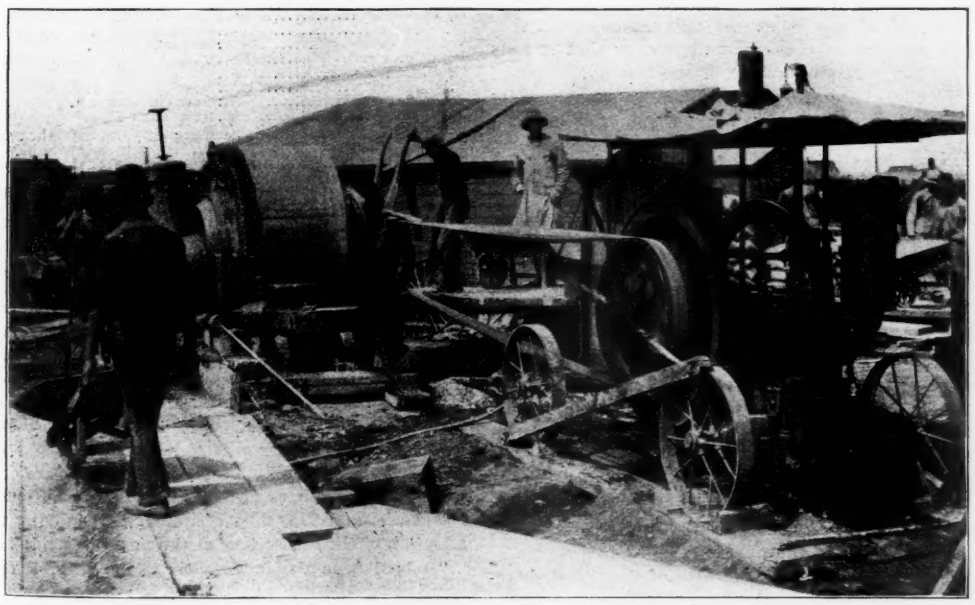


Fig. 3.—Details of Carriage, Pneumatic Car Journal Turner.

A New Tie Preserving Plant.

The Chicago & Eastern Illinois has made a contract with the Chicago Tie Preserving Co., Chicago, to build a plant for treating ties chemically at Mount Vernon, Ill. The plant will be of such size that about 100,000 ties a year may be treated, and either the zinc-tannin process or the zinc-creosote process, as used in Germany, will be adopted.

The zinc-tannin process has been worked in this country by the Atchison, Topeka & Santa Fe, the Union Pacific, the Atlantic & Pacific, the Summerville (Texas) Tie Preserving Works, and by the Chicago Tie Preserving Co. for the Chicago, Rock Island & Pacific. Mr. O. Chanute, President of the Chicago Tie Preserving Co., states that it has been demonstrated by treating many millions of ties that this process will more than double the life of inferior woods, such as pine, hemlock, black oak, etc., but there have been some failures, either in consequence of the refractory condition of the ties or their subsequent exposure. It has been found that treated ties laid in lime ballast, coal mine culm, or in cinders, decay sooner than in prairie soil or clay. The Chicago Tie Preserving Co. modified its process in 1896, and now feels assured that it is more than tripling, perhaps quadrupling, the life of the hemlock ties upon which it operates.



The Ransome Concrete Mixer.

The zinc-creosote process has been worked in Germany for about twenty years and is said to be steadily gaining ground over other processes. Mr. Chanute intends to go abroad to investigate the German practice this winter, and upon his return it will be definitely decided which process to adopt at the Mount Vernon works.

The Ransome Concrete Mixer.

One of the interesting features of the Chicago, Milwaukee & St. Paul track elevation in Chicago is the use of concrete abutments at the subways, where stone masonry has heretofore been used by the Chicago roads for such work. All the concrete except at three crossings was mixed by means of a Ransome portable concrete mixer, which is shown in operation by the accompanying engraving.

This machine was made by Fairbanks, Morse & Co., and consists essentially of a revolving cylinder carried on four idler wheels, whose axles are fixed to two side timbers forming part of the frame. The frame in turn is mounted on wheels, so that the mixer can be moved from one point to another. Inside the cylinders are riveted plates, which deflect the material in such a way that as the cylinder revolves the ingredients are turned over and over and are thoroughly mixed. Two plates riveted to a shaft and held in either of two positions, by means of springs on the outside of the cylinder, serve either to carry the mixture over the dumping chute, or to empty it into the chute. The chute has just enough inclination, so that the concrete with a little assistance slides down into the wheelbarrow placed under the lower end. The chute also extends into and across the inside of the cylinder and is hinged longitudinally along its center, so that it may be closed upon itself when the machine is mixing. Each end of the cylinder has an opening, and through one of these the mixed concrete is discharged, while the materials are charged through the opening on the opposite side. The mixer is turned continuously, but the discharge is intermittent.

On the Chicago, Milwaukee & St. Paul the concrete mixer was connected by a belt to a 12-h. p. Fairbanks-Morse portable gasoline engine, but it was found that an 8-h. p. engine would probably be sufficient for this work. This engine made 235 revolutions per minute and the pulley wheels were so proportioned that the mixer made 12 revolutions per minute. Approximately one gallon of gasoline was used per hour, costing about 8 cents per gallon, while the only attention required by the engine was in starting and oiling.

The operation of the mixer consists in first admitting to the cylinder the required amount of water, then the cement, gravel and crushed stone in the order named. After a few turns of the machine the plates in the interior are set to dump, and the concrete is delivered into the wheelbarrows placed under the chute. As soon as the cylinder is emptied, another charge is put in and the operation repeated. The time required for each charge is from two to three minutes. The stated capacity of the mixer used by the Chicago, Milwaukee & St. Paul was 75 cu. yds. in 10 hours, but 96 cu. yds. have been mixed in that time; about 70 cu. yds. in 10 hours was the average run with a crew of from 26 to 30 men. The concrete turned out by this mixer is considered by the engineers in charge of the work to be as nearly perfect as any which they have used, and far superior to concrete mixed by hand.

The Ransome Concrete Mixer.

Foreign Railroad Notes.

The car on which the body of the late Empress Elizabeth was transported from Geneva to Vienna is described as a "court hearse car," belonging to a car-loaning company. It weighs 20,000 lbs., and has a wheel base of 13 ft. Outwardly it differs from a passenger car by an iron railing which incloses it. It has four windows and platforms on the sides. The color is a very dark green. The interior is divided into two compartments, connected by folding doors. The smaller compartment, for the attendants, has seats for three. The larger compartment has a raised platform hung with tapestry, for the coffin; the walls and ceiling are covered with dark green hangings, and the plate glass windows hung with black silk curtains.

A branch of the Trans-Caspian Railroad has been completed from Samarcand northeastward some 175 miles to Tashkend, in a country which grows cotton and silk, although it is in about the latitude of New York. Tashkend is about 1,000 miles south of the Siberian Railroad, and it is quite possible that the two lines will some day be united.

In Berlin a man was tried for causing a railroad accident. He had broken the green glass of two switch lanterns, so that they showed "track clear," instead of "slow up," and laid an iron bar across the track. The engineman of an approaching train saw the bar in time to check his train, and though the engine ran over it the train did not leave the track, and then the broken lanterns were discovered. When the guilty man was tried, the state's attorney asked that he be sentenced to two years' imprisonment. The judge, however, said that was too little for such a dangerous crime and gave the man five years.

In the month of August the Siberian Railroad was opened as far as Siminskaja, on the River Oka, within 150 miles of the city of Irkutsk, the capital of Siberia, near Lake Baikal. The rails, however, were already down to Irkutsk, and the road was to be open for traffic to that place before winter sets in.

RAILROAD GAZETTE

ESTABLISHED IN APRIL, 1856.
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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

A good many of the readers of the Railroad Gazette are members of the American Society of Civil Engineers, and of these a good many are interested in railroad track. Some of these readers have noticed, and of course some of them have not, the effort to get a committee on rail joints appointed in the Society. Such a committee might or might not be able to settle anything about rail joint practice, but it could collect, analyze and digest a great deal of information and make it available to the mass of those who would like to use it. This work would be one of great difficulty and the value of the results would be directly proportionate to the self-sacrifice and gratuitous labor which a committee would put into it. We cannot imagine that any member would like to be put on the committee, but no doubt there are many devoted men who could be induced to serve. But it is for the members of the Society to say whether or not the committee shall be appointed, and a letter ballot is now out. In order that a committee shall be appointed it is necessary that it should receive the affirmative vote of a majority of a total vote of at least one-third of the corporate members of the Society. Some 350 votes (more or less, we do not remember exactly) had been received at the time of the last regular meeting of the Society; but 200 more votes must be cast before the committee can be appointed. Whether or not there are still 200 men who have not voted, and who are sufficiently interested in this subject to vote one way or the other, we cannot pretend to say; we merely state the situation. We make the guess, however, that if the appointment of the committee should fail because not enough members voted, a great many of those members will be wondering six months from now why under the sun such a committee was not appointed. Very likely many of them will say that the management of the Society is very unenterprising, and some of them will even say that we ought to have some live young men in the Board.

As announced in our last issue, two Western railroads have abandoned the practice of making passengers show their tickets on entering the cars, a practice which one of them had regularly maintained (at way stations as well as at terminals) for over five years. The regulation has prevented accidents to passengers, has saved money which otherwise would have been lost (through the inability of the conductors to detect passengers who would get on to the train without tickets), and also, without doubt, has stopped some stealing among conductors; but these important benefits are thrown overboard because "the customers of the road do not like the gates." We suppose that the term "customers" as here used means mostly drummers, and that their actual or threatened diversion of business, passenger and freight, to rival railroads is the chief cause of this change, at least, so far as we hear; they organize and express the opposition. Indeed, the drummers, according to the Kansas City Times, say that "the gate system was expensive to them; their per diem [expenses] always ran behind on account of it." This is frank, to say the least. The conclusion must be that the only way they can keep their traveling expenses within what they call a reasonable limit is to cheat the railroads. Further, the expensiveness of the gate system "has put the commercial men to untold inconvenience," from which we must infer that they have had difficulty in satisfactorily explaining to their employers why their expenditures were so heavy. But do their employers approve of cheating the railroad? It is highly desirable that this issue be stated directly and in plain language. If, as appears to have been done in some cases, the drummer complains to his employer that the gates use up time that he might employ in talking with buyers, and the employer thereupon complains to the railroad officers that his business is being damaged, a good deal of nonsense has masqueraded as fact.

It is to be remembered that in adopting the simple rule to show tickets on entering the cars, we are merely getting back to a fundamental principle that is in force in practically every other business in which tickets are used as evidences of a right to be in a certain place. Perhaps these two roads will be able to convert their competitors, so that the fight can be renewed in some form. With the roads in a given territory united, the question could be decided on its merits. This is a detail in which the railroads cannot possibly misuse the public, and those who believe that wide open competition is the only true theory, and that their theory is in danger, may calm their fears. An element in the "gate system" which seems unimportant, but which, nevertheless, involves scores of dollars where one would hardly think the matter worth notice, is set forth in the remarks of a General Passenger Agent, printed in a Western paper:

> The question of half fares is an important one. It is a common practice for a mother or a father to get on a train with a child running well on toward 10 years of age, and absolutely refuse to pay the conductor the half fare which is required for the passenger. That is bad enough, but there are times when there are three or four children, every one of them over the minimum age, and not a cent can the conductor get. The practice is carried further, and when full fare is demanded for a child over the age of 12, perhaps as old as 14 or 15, the conductor must take half fare or nothing. To be sure, he has the right to eject the passenger; he can put off the seven-year-old and so maintain the rights of his company, but he will do it at the cost of incensing the rest of the people on the train, and thus the gates are missed. Where gates are on a train the gatemen see that all children between the stated ages have either half-fare or full-fare tickets, and if they are not supplied, then they are simply kept off the train. He can keep them off the train without offending the other passengers, but once they get on and the train moves, what is the company to do, I would ask?

Geography and the Officers of the Am. Soc. C. E.

The regular ticket of the American Society of Civil Engineers, as made up by the Nominating Committee appointed for that purpose, was announced at the last meeting of the Society and is printed on a later page of this issue. No one can complain that it is deficient in dignity or ability, or that it fails to be fairly representative of the Society. Even if it were lacking in these particulars we should hardly presume to criticise it; but perhaps a good purpose may be served by looking over the geography of the ticket.

The constitution provides that one vice-president and six directors shall live in District No. 1 and that the other directors shall be distributed among the other districts. The geographical distribution of the directors is, therefore, made by the constitution, and as one of the vice-presidents holding over from last year lives in District No. 1 the Nominating Committee was free to go elsewhere for both of the vice-presidents this year, one of whom was taken from Central New York and the other from the Mississippi Valley. For obvious reasons the Treasurer should live in New York. His duties call for his frequent attendance at the house of the Society. And here we may justly say that the present nominee has shown diligence, fidelity and ability in the administration of the office.

The real geographical interest of the ticket therefore centers in the President. An examination of the list of the past presidents shows some facts which we believe are hardly suspected by most men of the Society. Of course in the earliest years, say from 1852 to about 1873, inclusive, there were obvious reasons why the presidents should have been taken from New York or near there. Into these reasons we need not go further at this moment.

In 1875 Gen. George S. Greene was elected President. It is not clear from the records whether or not he was at that time a resident of New York City, but for our present purposes he was practically so. Including Gen. Greene and coming down to the election of Mr. Fteley in 1898, twenty-four years, only six presidents lived in New York City at the time of their election. These were Gen. Greene, Albert Fink, Charles Paine, W. E. Worthen, T. C. Clarke and Alphonse Fteley. In the same time Chicago gave to the Society three presidents, namely, E. S. Chesbrough, Octave Chanute and George S. Morison, and in the same period Pittsburgh produced three presidents, M. J. Becker, W. P. Shinn and William Metcalf. Of the other presidents elected in that period one each came from Bristol, Pa.; Lowell, Mass.; Lambertville, N. J.; Milwaukee, Philadelphia, St. Louis, Ottawa, Baltimore, the United States Army and New Orleans. Geographically, therefore, the honors have been pretty well scattered, and when we consider the distribution of membership they have probably been very fairly divided.

But an examination of this list shows a fact that is really remarkable, namely, that in the whole history of the Society, from 1852 to 1898, Boston has never furnished a President and only three have come from all New England, namely, Mr. James Laurie, from Hartford, Conn., in 1852; Mr. W. J. McAlpine, Stockbridge, Mass., in 1868, and Mr. J. B. Francis, Lowell, Mass., in 1880. Properly, Mr. McAlpine should be credited to New York City, as his principal work was there. When we consider the relative membership in the Society from New England, the relative age of the profession there, the grade of engineers practicing there, the quality of the work that they have done, and, finally, their loyal devotion to the Society, it seems remarkable that in the last 45 years New England should have given but one President to the Society. Obviously, the New England Engineers have not the "Ohio idea" in politics, and we judge that nobody will deny that the presidency next year is fairly due to New England, and especially to Boston.

We append below a list of the presidents, with their residences, as drawn up, at our request, by the Secretary of the Society, Mr. Charles Warren Hunt. He says that to ascertain the residences of these presidents at the time of their election has been difficult in some cases, and it seems well to now put it on record, as it may be interesting to other inquirers, now or later.

Presidents Am. Soc., C. E.—Their Place of Residence at the Time of Election.

James Laurie	1852	Hartford, Conn.
James P. Kirkwood	1867	Brooklyn, N. Y.
W. J. McAlpine	1868	Stockbridge, Mass.
A. W. Craven	1869	New York.
Horatio Allen	1871	New York.
J. W. Adams	1873	Brooklyn, N. Y.
G. S. Greene	1875	New York. (?)
E. S. Chesbrough	1877	Chicago, Ill.
*W. M. Roberts	1878	Bristol, Penn.
Albert Fink	1879	New York City.
J. B. Francis	1880	Lowell, Mass
Ashbel Welch	1882	Lambertville, N. J.
Charles Paine	1883	New York and Tenafly, N. J.
D. J. Whittemore	1884	Milwaukee, Wis.
Frederic Graff	1885	Philadelphia, Pa.
Henry Flad	1886	St. Louis, Mo.
W. E. Worthen	1887	New York City.
T. C. Keefer	1888	Ottawa, Canada.
M. J. Becker	1889	Pittsburgh, Pa.
**W. P. Shinn	1890	Pittsburgh, Pa.
O. Chanute	1891	Chicago, Ill.
M. Cohen	1892	Baltimore, Md.
William Metcalf	1893	Pittsburgh, Pa.
Wm. P. Craighill	1894	U. S. Army.
G. S. Morison	1895	Chicago, Ill.
T. C. Clarke	1896	New York City.
B. M. Harrod	1897	New Orleans, La.
A. Fteley	1898	New York City.

*From a letter on file it seems evident that Mr. Roberts lived at Bristol, Pa., although connected with the N. P. R. R. Co., whose address at that time was 23 Fifth avenue, New York City.

**Mr. Shinn resided in New York until Jan. 13, 1890, when he moved to Pittsburgh, so that at the time of his election, Jan. 15, 1890, he was a resident of Pittsburgh, but when nominated was a resident of New York.

Another Move Against the Scalpers.

The "demonstration" against the ticket scalpers which was held in the Grand Pacific Hotel, Chicago, last week, appears to have been a meeting of considerable consequence. Besides 20 or 30 of the most prominent railroad traffic officers of the city, there were present representatives of about 50 well-known mercantile firms, many of them large wholesale concerns. Mr. A. M. Compton, Chairman of the Executive Committee of the National Association of Merchants and Travelers of Chicago, in moving the adoption of the resolutions at the meeting, said:

> "Judged from the facts, a railroad ticket broker's office is a convenient, thoroughly advertised place for dealing in stolen railroad tickets; for teaching the forgery of other people's names; for forging the signature of railroad joint agents. A railroad ticket scalper's office is a public fence, the nature of which is to encourage theft of mileage books and other forms of railroad passage. A railroad ticket broker's office is the headquarters of a class of men who are engaged in changing the amount of dollars and cents on railroad tickets; plugging tickets; erasing amounts, names and dates through the use of powerful acids. In fact, it is the greatest and best advertised and most openly conducted place for educating criminals that we have in this country. . . . Some of the best customers of the railroad ticket broker are

believed to be certain railroad officials who, not content with a natural share of the business, open a branch office on Clark street and start a 'transportation bargain counter' enterprise, furnishing the ticket broker with blocks of tickets to sell at a cut rate to the customers of the ticket broker, while the regular cusomers of that railroad are paying full fare at the city and depot ticket offices. . . . The vast majority of railroad men at the present time are law-abiding citizens, but it seems necessary to pass some stringent legislation to protect the law-abiding railroad man from the law-breaking railroad man."

The resolutions adopted by the meeting said, in part:

"Resolved, That general railroad conditions, the superior character and low cost of transportation service rendered by American railroads, and the evident desire on the part of representative railroad men to cultivate a spirit of co-operation and reciprocity between mercantile and common carrier industries, furnish good reasons for manufacturers, merchants and commercial travelers everywhere to use their influence individually and collectively to secure reasonable and necessary legislation in the interest of common carriers.

"Resolved, That a careful investigation of actual conditions and a study of the criminal history of the various states demonstrate clearly the fact that the practice known as railroad ticket scalping is pernicious in its effects, unfair in its results, is contrary to the American spirit of fair play, is an evasion of the plain intent of the interstate commerce law as it reads, and, therefore, the practice should be abolished by national legislation."

The chairman of the meeting was authorized to organize a central anti-scalping committee, with sub-committees in each large distributing center throughout the country, "for the purpose of co-operating vigorously and continuously with common carriers until Congress shall permanently abolish the vicious practice of railroad ticket scalping."

Nothing could be truer than the statements of the foregoing resolution. The scalper's office has "pernicious effects" on those drummers who patronize it, and the merchants who voted for this resolution were only doing their simple duty toward their traveling salesmen and to themselves. The scalping business is "unfair in its results" to every individual passenger who does not know the tricks necessary to buy tickets at unauthorized offices or who chooses not to gamble on the chance of annoyances. "The American spirit of fair play" may not be a very strong phrase, from a legal standpoint, but it means a good deal. The scalper's plea is that tickets are merchandise, and that fair play demands the most "wide-open" competition; but the scalper whose tickets are not tainted with forgery or some other crime of the same nature, and quite as bad in principle, is usually the secret agent of some unprincipled railroad traffic manager, whose every move in the competitive field is a violation of fair play. In the railroad traffic field fair play demands that all rates be open, public and stable; and, as was said by Mr. Compton in his address, the law-abiding railroad man is entitled to every possible aid from Congress and the state legislatures to enable him to have the principle enforced. And it may not be out of place to remind merchants that this principle—that tariffs should be public and stable—applies in freight rates as well as in passenger.

Electric Turntables.

It may be questioned if the devices described in previous issues for applying electricity to locomotive turntables have not improperly been called "electric" turntables. It will be remembered that the Gibbs (which was probably the first), the Westinghouse and the devices in use on the Baltimore & Ohio Southwestern were simply independent power carts, or electric donkeys, each designed to be attached to either end of the table and run on the circular track in the pit. But in the case of the installation at Jersey City, described elsewhere in this issue, the driving mechanism forms a part of the makeup of the table itself, and it is reasonably safe to say that the design as applied to turntables is original. Besides the substantial manner in which it is built, one is impressed with the accuracy with which it is balanced, a slight pressure of the foot being sufficient to give it a seesaw movement. When an engine is being turned little or no pressure need be placed on the wheels which run on the circular track.

A question of considerable interest and of some importance arises in the general consideration of this subject, and naturally enough it is the ever present question of the working expenses. Let us review briefly some items of cost in connection with the electric turntables referred to above. At Chillicothe, O., the entire cost of equipment did not exceed $500. The motor was placed on a separate frame and geared to an old car wheel. At Cincinnati the B. & O. Southwestern also put in service a similar donkey, but more complete in many of the details. The cost of power for four months last year at the latter place was $29, and as the table was used 50 times a day the cost of power each time was about half a cent, whereas by hand it would have cost about 24 times that amount. In connection with the description of the Gibbs table in the Railroad Gazette of May 28 of last year an estimate was made, based on turning 176 locomotives a day, which led to the conclusion that the cost of power each turn was three-tenths of a cent, while the labor expense to do the work before the electrical installation was about 14 times that amount, and the actual reduction in the pay roll was $3 a day.

In the above cases it was necessary simply to provide a means of driving some turntable already in place. In the case of the Erie turntable, however, it is necessary to attack quite a different problem. A new table had to be built and one worked by hand was slow and costly, considering the amount of work to be done. From those in a position to know the facts it is estimated that at least $400 a month was expended for labor with the hand-moved table. With electricity the cost of labor for two men is reduced to about $100 a month, while the cost of electric power is but $20, and the number of locomotives turned is about 200 a day. A considerably larger number, however, could be turned without increasing this cost, since this is the minimum rate charged by the electric light company for this particular installation, and the amount would probably be less if the charge was made on the basis of the current used. Depreciation on machinery at 10 per cent. will give about $12 a month, making a total of $132, or a difference in favor of the new turntable of $268 a month. In the above comparison no mention is made of the increased fixed charges due to the additional investment for the new table. The saving in time and the convenience of handling many locomotives are, however, the most important features and cannot be estimated in dollars and cents.

Looking at the matter from every standpoint, whether the turntable is now in use or if a new one is to be built, there should be a saving by the introduction of electricity for the driving power when the number of engines turned each day is large. Just what the saving in each case would be can be easily figured when the facts in each case are fully known.

Annual Reports.

Union Pacific.—The reorganized company has issued a report for the six months ending June 30 last. On that date the company was operating 1,849 miles of road, which had been taken over at different dates since Jan. 1. For this reason no comparisons of earnings are made, the report being chiefly confined to giving the income account, the principal financial statements and setting forth the property so far taken over by the new company, and still to be acquired. The road operated on June 30 comprised the line from Council Bluffs to Ogden, 1,043 miles; Kansas City to Denver, 644 miles; Denver to Cheyenne, 104 miles; and 59 miles of small branches. The sidings owned amount to 660 miles, and the second track is 19 miles. Branches and other lines owned, most of which have been taken over since July 1, will bring the operated mileage up to 3,008 miles. The Union Pacific, before the receivership, operated 7,680 miles. The chief lines not included in the reorganization were the Union Pacific, Denver & Gulf, and Denver, Leadville & Gunnison, about 1,320 miles together; the Fort Worth & Denver City, 470 miles; the St. Joseph & Grand Island, 250 miles; the Oregon Short Line, 1,438 miles, and the Oregon Railway & Navigation Company, 1,165 miles. All of these companies have been successfully reorganized except the Union Pacific, Denver & Gulf, whose plan of reorganization has been announced in the past week. The Union Pacific, however, still retains an important interest in the Oregon Short Line and in the Oregon Navigation Company, although they are separately managed. It holds a preponderating interest in the stock of the Oregon Short Line, which, in turn, owns a majority of the common stock of the Oregon Navigation Company. The controlling interest in the preferred shares of the latter is held jointly by the Union Pacific, the Northern Pacific and the Great Northern.

The earnings in the six months covered by the present report are shown below:

Gross receipts (1,849 miles)	$7,670,579
Operating expenses and taxes	4,534,418
Net earnings	$3,136,161
Interest, dividends, etc	606,443
Balance	$3,742,604
Interest on funded debt	1,800,000
Other charges	145,918
Surplus	$1,796,686

The net income of the branch lines whose operation has been assumed since the close of the fiscal year, $446,659, if added to the net earnings as reported above, would have increased that figure to $4,189,263, and the surplus to $2,243,344. Out of this balance the directors have declared a semi-annual dividend of 1½ per cent., calling for $1,125,000.

Expenditures amounting to $1,622,740 have been authorized and partly made for the purchase of 43,000 tons of rails, costing $771,750; ballasting 78 miles of the Nebraska division, $177,000; cross-ties, $349,445; bridges and culverts, $152,000, and other maintenance of way work. For new equipment, $2,465,024 has been appropriated out of available cash resources other than earnings from operation, and in great part expended. Besides this sum, $600,000 is available for new equipment, through the sale of the three-quarters interest in the Pullman cars, and $417,452 of this has already been expended. The new equipment ordered includes 5,601 new freight cars, which will increase the tonnage capacity 169,525 tons.

Minneapolis & St. Louis.—The report for the year ending June 30 is the fourth issued by the new company. Each of these years has been prosperous and dividends have been paid regularly on the first and second preferred stocks, 5 per cent. on the former, and 3 per cent. on the latter up to July last, when it was placed on a 4 per cent. basis. This satisfactory showing was due partly to improving earnings, but about as much to the low capitalization. The summary of earnings for the last three years shows the following results:

	1898.	1897.	1896.
Gross earnings	$2,246,581	$2,006,505	$2,028,300
Operating expenses	1,295,622	1,131,716	1,136,814
Net earnings	$950,958	$874,788	$891,485
Total net income	1,118,824	1,030,023	1,035,533
Taxes, rentals and interest	707,995	706,236	703,753
Balance	$410,827	$323,787	$331,780
Dividends	265,000	245,000	245,000
Surplus	$145,827	$78,786	$86,780

The surplus in 1898 shown above was equal to nearly 2½ per cent. on the common stock, and is after deducting 5 per cent. dividends on the first preferred shares and 3½ per cent. on the second preferred. The company has had a substantial growth in traffic and in revenue, but expenses have grown about as fast as receipts, this, however, has been due to the larger amount of improvement work carried on. In 1898, for instance, the maintenance charges increased $170,300, which was more than the total increase in working expenses. Comparing with 1896, the expenses of maintenance of way and of equipment are nearly a third higher, while the cost of transportation has increased but 12 per cent. In the same period the gain in ton miles has been 25 per cent., and in passenger miles also 25 per cent. The train load has reached 201 tons, as compared with 185 tons in 1897, 173 in 1896, and only 155 tons in 1895, so that since the reorganization the average train load has been increased 55 tons, or about 30 per cent. The same record of improvement is to be found in all the traffic and train statistics. The increase in the loaded car mileage since 1895 is 3⅓ times the increase in the total car miles run, the respective rates of increase being 21½ per cent. and 6.9 per cent. In the same time the ton miles have increased 37 millions, or 35 per cent., but there has been an actual decrease in the freight train miles run.

French Railroads in 1896.

As the larger French companies have already made their reports for 1897, it is possible to tabulate the principal results of operation for that year. The Government publications, however, are always late in France (as in other countries that we could name), and the annual report, from an advance copy of which the following figures are taken, shows the position of the railroads at no later date than Dec. 31, 1896.

The figures for 1896 (as those for 1897) show a marked improvement in the financial position of the French railroads since 1893. This improvement, which has been patent to all observers, has been due in large measure to favorable industrial conditions and to the régime of economy introduced since 1893. In that year, the position of French railroads, which had been growing steadily worse, took a sudden turn for the better, so that now the brightest hopes are entertained for the future, both for the owners of railroad capital and for the state treasury. The following statistics will show the development of the railroads during different portions of the last 10 years.

The construction in 1896 was the smallest in ten years, only 232 kilometers (about 144 miles), being opened during that year. The present mileage is 36,472 kilometers, as compared with 35,350 in 1893, and 30,696 in 1886.

The gross receipts have also increased largely, being only 1,187.1 millions of francs in 1893 (as compared with 1,022.7 in 1886), and rising to 1,212.4, 1,246.5 and 1,279.4 millions of francs for 1894, 1895 and 1896.

The expenses, meanwhile, have not increased, being 673.0 millions in 1893, as compared with 672.8 in 1896. The proportion of receipts that goes to cover expenses has rapidly declined. From 1886 to 1893 the proportion of expenses to receipts (coefficient of exploitation), increased somewhat irregularly from 50.4 to 56.7%; since then it has steadily declined to 55.4% in 1894, 53.6% in 1895, and 52.6% in 1896.

The net receipts have, therefore, increased very rapidly. In 1893 they were only 514 millions of francs, which was lower than for any year from 1888 to 1892, and only 35 millions greater than in 1886. In 1896 the

net revenue attained the sum of 606.6 millions of francs, or 92½ millions above the net income for 1893. The increase in net revenue was fairly general, the state railroads being the only one of the great companies without an increase in the net revenue for the year 1896.

The following table of kilometric receipts, expenses and income shows the improvement since 1893 still more clearly:

	1886.	1893.	1896.	
Receipts per kilometer	33,317	33,581	35,079	francs
Expenses per kilometer	17,700	19,038	18,447	"
Net income per kilometer	15,617	14,543	16,632	"

Translated into American dollars and English miles, it may be said that the French railroads have $10,910 receipts, $5,737 expenses and $5,173 income.

The increase in the traffic has been considerably greater for passengers than for freight. From 1891 to 1896 the number of tons hauled one kilometer increased from 12,294.4 millions to 13,217.4 millions, or about 8%; the number of passengers carried one kilometer has risen from 8,285.5 to 11,154.0 millions, or almost 35%. This disparity in the increase of the two kinds of traffic has been largely due, however, to the deflection of a great bulk of the freight traffic to the specially favored canals and to the increase in the passenger traffic due to the reform of 1892. In consequence of this reform the passenger fares have decreased from 4.35 centimes per km. (1.35 cts. per mile), to 3.79 centimes per km. (1.18 cts. per mile), without the Government duty, while the receipts per ton mile have only decreased from 5.36 to 5.12 centimes per kilometer (1.67 to 1.59 cts. per mile). The train mileage in 1896 was 296,542,784 kilometers, which is equal to 22.2 trains daily over the whole network.

The continued activity of Western traffic men, as indicated by the constant reports of their conferences and "agreements," suggests that the associations out that way, like the Irishman's turtle, are dead, but are not conscious of the fact. The conferences continue, but the practice, all around, of making whatever rates one sees fit to make, also continues. It is now reported that all the roads in the Southwestern Passenger Association have flatly refused to pay the fines assessed for violating the agreement in the matter of transportation of troops. The Western Trunk Line committee also, according to reports, is having trouble because the members are disregarding the percentages allotted to them, and there is no way to compel any member or members to contribute to the support of their less fortunate brethren. True, there is some kind of an ethical understanding "on the side" that they will each "help the other fellow out" but of course, as usual, there is nothing available to do it with. In fact, if reports are to be believed, one unfortunate brother, who in times past has been accused of various misdeeds, is now actually starving, not being able to secure even the crumbs from the feast.

Some of our passenger agents apparently leave no stone unturned to cultivate travel on their lines, but they seem to have neglected one "attraction." In many parts of the world pilgrimages add enormously to passenger traffic. There is a little place in Rhenish Prussia of less than 5,000 inhabitants which on one day of last August had about 5,000 visitors in a procession in honor of a wonder-working picture of the Virgin, and the number of pilgrims visiting it yearly is said to be about half a million. It is unfortunately true that this country is short of saints; but could not some enterprising G. P. A., out of pure devotion to the interests of his company, live a saintly life himself? But why suggest the unthinkable?

NEW PUBLICATIONS.

The Columbia Engineer.—The transactions of the Engineering Society of Columbia University for 1897-8 have been published in book form, making 158 pages. The following subjects are treated: "Some Details of Rapid Transit," William Barclay Parsons; "Some Reservoirs Which I Have Seen," J. J. R. Croes; "Subterranean Temperatures," Prof. William Hollock; "Sewage Disposal," Col. George E. Waring, Jr.; "Engineering Features of the Nicaragua Canal Problem," Foster Crowell; "Interpretations of Water Analyses," George C. Whipple; "Treatment of Steel for Car Axles," L. R. Pomeroy; "Masonry," George S. Morison; "Railroad Accidents and Their Prevention," Henry G. Prout; "Heating and Ventilation of Buildings at the New Site of Columbia University," George A. Suter; "New and Old Systems of Power Distribution in Factories," Gano S. Dunn; "Improved Canal Facilities Between Lake Erie and New York City," Prof. William H. Burr; "The Inspection of the Materials of Engineering," P. S. Hildreth. The book is not for sale, but a limited number of copies may be obtained on application to the Engineering Society, Columbia University, New York City.

Master Car Builders' Association.—We have just received from the Secretary the report of the Proceedings of the Twenty-second Annual Convention of the Master Car Builders' Association, held at Saratoga last June. The volume has 452 pages and numerous folded plates. It can be obtained by addressing John W. Cloud, Esq., Secretary Master Car Builders' Association, 974 Rookery, Chicago, Ill.

TRADE CATALOGUES.

Westinghouse Electric & Mfg. Co.—We have received from this company circulars dated August and September, 1898. The latter, No. 55, describes some large installations of polyphase inductor generators and gives illustrations of a 500-k. w. generator as being assembled in the shops. A table is given showing the capacity, speeds and approximate weights of 7,200 alternation inductor generators. From this it is observed that a 700 k. w. generator, running at 120 to 130 r. p. m., weighs 150,000 lbs.

The circular describing the generators and rotary transformers for electrolytic work contains descriptions and detail drawings of the armatures and fields of 810 and 560-k. w. generators, also some of smaller capacity. In the written description of the rotary transformers for this work it is stated that in mechanical design they are similar to the direct current generators made by the Westinghouse Company. The step-down transformers can be readily arranged for delivering a variable voltage. A number of terminals may be provided to any one of which the rotary transformers may be connected.

Steel Castings.—The American Steel Casting Co., Thurlow, Delaware County, Pa., sends a handsome pamphlet describing and illustrating from photographs a number of important or remarkable castings made by that company. The first engraving, for instance, is a box slide for a 13-in. gun carriage made of open-hearth steel. The casting weights 17,000 lbs., and the physical tests show, tensile strength, 75,100 lbs.; elastic limit, 38,000 lbs.; elongation, 25 per cent.; reduction of area, 30.5 per cent. Among the locomotive parts shown by engravings, or mentioned, are driving wheel centers, cross heads, piston heads, crank pins, side rods, engine frames, etc. A striking picture is a group of 72-in. driving wheel centers for the Pennsylvania Railroad, each of which weighs 1,950 lbs. Probably the largest single piece shown in this pamphlet is the stern post for the Columbia, which weighs 49,520 lbs. The tensile strength is 75,800 lbs., elastic limit 35,000 lbs., elongation 21.75 per cent.

Car Wheels.—The Lobdell Car Wheel Co. of Wilmington, Del., sends us a catalogue showing and describing briefly the various standard wheels made by that well-known works. The foundry has floor space for molding 800 wheels a day, with about 2½ acres under one roof. The six cupolas have a melting capacity of 60 tons an hour, and are supplemented by a 10-ton gas furnace for special work. The machine shops have tools sufficient to fit up 100 pairs of wheels and axles a day, and in addition, to grind the treads of 100 or more motor wheels. The patterns shown and described in the catalogue are of the wheels in constant use, but other patterns will be made whenever the occasion demands. Broad gage and narrow gage wheels for cars, engines and tenders, also wheels for electric and cable cars and for many special purposes, are shown.

Modern Methods.—The Link Belt Machinery Co., of Chicago, has issued catalogue No. 24, a book of some 300 pages, in which are described at some length the applications of link belt machinery for handling raw and manufactured goods and for the transmission of power. These belts are made of detachable links, each one of which is cast separately. The Dodge system of handling coal is shown by a number of engravings, and the extent of this application of link belt machinery is given in many of the more important installations. Its uses in power stations, for traveling cranes, in mill work machinery and for many other purposes are enumerated. On page 277 are given formulas for the horse-power of leather belts and the horse-power of gears and shafts. Other convenient data are scattered through the book.

"The Case Automatic High Speed Engine" is the subject of a catalogue also prepared by the New Britain Machine Co. In this is described the numerous types with detailed drawings of the Case high speed engines, showing its use in driving centrifugal pumps, direct connected dynamos, and fans. These engines are compact and, relative to their power, take up little space.

Causes of Trains Breaking in Two.

Mr. J. W. Thomas, Jr., Assistant General Manager of the Nashville, Chattanooga & St. Louis, has for several months required reports from conductors of all failures of drawbars and couplers in trains, and he has made up a summary of the reports each month. The reports for the Chattanooga Division and the Western & Atlantic Division for the month of August are given below. These reports are divided into 11 columns, giving the date, name of conductor and of engineman, etc. We have omitted those columns which are not of general interest, retaining those showing the number of cars, loaded and empty, in each train, the number of air brake cars in service, the cause of the failure, and "remarks." The term "slip pin" evidently is used by Mr Thomas to designate a tail bolt.

Mr. Thomas finds that since he has given particular attention to this subject, the number of break-in-twos has decreased one-half.

NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY.

A.—TRAIN PARTED REPORT, CHATTANOOGA DIVISION, AUGUST, 1898.

Cars. Ld.	Cars. Emp.	Ser. Air Cars.	Cause.	Remarks.
16	1	3	Slip pin gave way	Head of slip pin in S. I. C. L. 53718 pulled off. Poor iron. Old flaw.
27	0	11	Draft timber bolts gave way	Draft timber bolts in B. & R. 275 gave way. Evidence of rough handling.
14	5	7	Slip pin key lost	Train parted as it was being started from station. Evidence of rough handling.
18	0	9	Link broken	Iron good. Evidence of rough handling.
4	28	11	Pin pulled	Conductor claims some one pulled pin while train was standing at station.
22	0	6	Slip pin pulled through end of draw bar.	Head of slip pin in S. I. C. L. 1087 badly worn.
27	0	12	Draft timbers broken	Evidence of rough handling.
13	6	3	Slip pin key gone	Slip pin key worked out going down mountain.
26	0	15	Knuckle broken	Knuckle in St. L. R. C. Co. 674 broken in starting. Evidence of rough handling.
16	0	12	Slip pin key lost	Slip pin key lost out of C. H. & D. 11452. Train was running along with light trottle.
11	11	13	Slip pin key jerked in two	Three sections coupled together coming down mountain. All had trains partially equipped with air. First man thought he was going to run by switch and called for brakes. Second man applied brakes lightly. Instead of bringing train to stop as per instructions, first man whistled off brakes, and as brakes released train parted.
11	12	10	M. C. B. couplers parted	Conductor could not tell which knuckle opened.
1	19	13	Draft timbers pulled out	Draft timbers in N. C. & St. L. 1608 rotten. Car being brought to shops for repairs.
9	0	9	Link broken	Solid link between engine and postal car broken. Link showed old flaw.
0	18	18	Miller draw bar pulled in two	Train consisted of 18 tourist cars. Miller draw bar had old break and pulled in two as engineman released brakes to pull in siding.
8	16	13	Slip pin gone	M. C. B. coupler in S. I. C. L. 1966 fell on track, derailing two cars. Track blocked 2½ hours.
18	0	6	Slip pin broken in key way	Slip pin key in N. C. & St. L. 8139 gave way through key way. Old flaw.

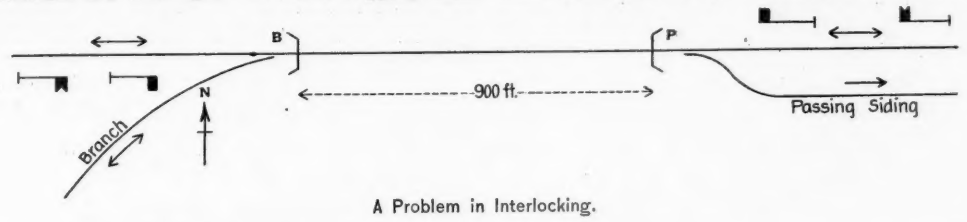
B.—TRAIN PARTED REPORT, WESTERN AND ATLANTIC DIVISION, AUGUST, 1898.

Cars. Ld.	Cars. Emp.	Ser. Air Cars.	Cause.	Remarks.
24	1	5	Slip pin broken	Brakes were set up on rear of train. Engineman released his brakes jerking train in two.
20	0	8	Slip pin key lost	
18	0	9	Pin broken	Pin gave way as train was being started. Pin not sent in for examination.
20	0	11	M. C. B. couplers parted	Conductor could not tell which knuckle opened.
14	12	10	Knuckle pin broken	Train was running along. Old flaw.
19	2	14	Link broken	Steady pull.
22	0	6	Slip pin key gone	Train was stopping at switch.
17	0	10	Slip pin key gone	Slip pin key lost out of S. I. C. L. 15254.
24	3	5	Coupling pin jumped out	
10	17	19	M. C. B. couplers parted	Knuckle of Gould coupler in F. G. E. 12288 opened, allowing train to part.
20	0	5	Slip pin broken through key way	Train was being stopped to take siding.
12	11	16	Knuckle pin jumped out	Piece of wire twisted around knuckle pin; no further trouble experienced.
20	0	5	Slip pin gave way in key way	Old flaw.
18	4	10	M. C. B. couplers parted	Train parted twice between cars equipped with Mo. Pac. and Chicago couplers. Put chain around drawbars. No further trouble. Conductor could see no reason for couplers coming apart.
0	20	20	Knuckle broken	Train of empty tourist cars. Knuckle gave way in Pullman car 2652 as train was starting into siding.
11	18	5	Coupling pin jumped out	
20	0	6	Knuckle pin worked out	

A Problem in Signaling.

A Chicago man who seems to enjoy puzzles, writes us that he has been called upon to solve the problem described below, and, having been compelled to give it up, he wants some signal engineer among the readers of the Railroad Gazette to tell him how to do it.

The scheme shows a branch track and a passing siding joining a main track, at opposite ends of a high bridge. On account of the bridge the expense of double tracking is prohibitive, and the branch and siding switches are 900 ft. apart. It is desired to erect home and distant signals for the main track in both directions, so that if either of the two switches is thrown, the signals will indicate "stop." On account of the light traffic on the branch, trainmen of the branch trains will be required to operate the switches and signals; and the same rule will apply in the case of trains entering the passing siding. This is to avoid the expense of employing an attendant day and night. To avoid stopping main



A Problem in Interlocking.

line trains, the signals will stand normally clear for the main line. The operation would be as follows:

Branch train arriving at B would be required to thrown all signals to danger in order to protect its movement while passing from B to P; at P train would enter passing siding, and would then be required to restore all signals to safety. There would be no particular difficulty in an operation of this kind if trainmen were required to walk from B to P, but this would consume too much time. It is, therefore, desired to throw all signals to danger from B, the train then to proceed to P, the men closing switch B after them, enter passing siding and then clear all signals from P. In other words, the signals should be operated from two points, B and P. Again, the reverse movement, from main track to branch, would require signals to be first operated from P, and then from B.

Eastbound main track trains heading in on the passing siding must be able to operate signals from P without stopping at B. The cost must be within reasonable limits, and the apparatus must be simple in construction, so that the trainmen will have no difficulty in working it.

The problem could be solved by using track circuit and automatic electrical signals, but the expense of maintaining signals of this kind has been considered prohibitive.

TECHNICAL.

Manufacturing and Business.

The Falls Hollow Staybolt Company has recently received some important orders for export to Japan. In fact the company reports that its trade is increasing fast in both hollow and solid staybolt iron for use in the United States, which fact is modestly attributed to low price and high quality.

The American Wood Preserving Co. has just received an order from the New York Central & Hudson River for several hundred gallons of woodiline stains. This company makes a stain using the wood-preservative woodiline as a basis. It has been used successfully in exposed places on the sea coast, notably since December, 1895, on the cottage of Mr. Wilson Brown (Supt. Amboy Div. P. RR. Co., Camden, N. J.), at Seaside Park, N. J.

At the annual meeting of the Michigan-Peninsular Car Co., held in Chicago, Oct. 4, the directors were re-elected, with the exception of George Hargreaves, who is to succeed H. B. Moorehead, resigned. The other directors are: James McMillan, Hugh McMillan, H. C. McMillan, William Hecker, R. H. Thompson, C. L. Treer, W. M. Treer, F. J. Crerar and W. J. Trumbull.

The United States Railway Supply Co. has been incorporated in the state of New Jersey with a capital of $25,000 to manufacture railway specialties. The incorporators are: Wm. P. Stymus, Jr., Frank R. Pentz, Edwin M. Bushnell and Wendell P. Booth.

J. W. Duntley, President of the Chicago Pneumatic Tool Co., has returned from an extended trip to the Pacific Coast, having gone as far as Victoria, B. C., and he states that he has met with the most flattering success in the introduction of pneumatic tools and in securing orders. Owing to the amount of business developed by him on the coast, the company has decided to open an office in San Francisco and will be represented there by Henry Engles at 537 Mission street, San Francisco. Mr. Duntley reports that business on the coast is expanding in the pneumatic tool line and that the demand for pneumatic tools and appliances, including various sizes of piston air drills, pneumatic hammers, riveters, etc., is beyond his expectations.

The Johnson hopper bottom, handled by McCord & Co., and the McCord journal box and lid will be used on the new cars ordered by the Delaware & Hudson Canal Co. from the Buffalo Car Mfg. Co. and noted in our issue of Sept. 9.

The Wolff & Zwicker Iron Works of Portland, Ore., are contemplating building a dry dock in Portland, but have not yet decided the matter.

We are advised by the Pearson Jack Co. of 64 Federal street, Boston, that the ratchet jack, manufactured by them, has recently been accepted by the Union Pacific, the Wabash, the Wisconsin Central, the Northern Pacific, the Norfolk & Western, the Oregon Short Line, the International & Great Northern, the Lake Shore & Michigan Southern, the Elgin, Joliet & Eastern and the New York, Ontario & Western.

The work of chipping and caulking and reaming holes and driving the deck and shell rivets on the new United States cruiser Illinois was done with pneumatic tools furnished by the Chicago Pneumatic Tool Co. The company reports that on an average between 700 and 800 pneumatic hammers and drills are being sold a month.

A couple of weeks ago we stated that the London correspondent of the Birmingham Daily Post had received information from an official source to the effect that the Victorian and South Australian governments will invite tenders during October for railroad material, such as rails and girder work. The United States Consul at Birmingham confirms this in a report. These tenders are usually asked in London, and the colonial agent at that place for Victoria is Lieut.-Gen. the Hon. Sir Andrew Clarke, 15 Victoria street, S. W.; for South Australia, Hon. Thomas Playford, 1 Crosby square, E. C.

The Sunset Power, Mining & Milling Co. has been incorporated in the state of Washington, with a capital of $1,000,000, to build a smelter and sawmill near Index.

It is stated that the Fred W. Wolf Co. of Chicago has made plans and is receiving estimates for a plant to be built for the Titan Steel Co. at Pullman, Ill. According to the report, the plant will comprise a machine shop, L-shaped, 40x200 ft. and 80x60 ft., foundry 80x200 ft., offices 40x40 ft.

The Railway Automatic Scales Co., with principal office in Charleston, W. Va., has been incorporated with a capital stock of $3,000,000, of which $1,000 is paid in. The incorporators are: Thomas Adams, Jr., Brooklyn, N. Y.; Wm. P. Hall, Greenwich, Conn.; Alva W. Hall, Leroy W. Baldwin and Willard Brown of New York.

W. P. Brown, C. E., M. Am. Soc. C. E., has been appointed Eastern representative of the King Bridge Co., with offices at 501 Fifth avenue, New York. Mr. Brown has been with the company at the home office in Cleveland for several years.

The Michigan-Peninsular Car Co. reports earnings for the fiscal year ending Aug. 31 of $670,877, against $176,688 during the previous year. Deducting fixed charges of $100,000, there were paid in dividends $300,000 and $50,000 respectively, leaving as a surplus of the two fiscal years $270,877 and $26,668 respectively.

The Foos Gas Engine Co. of Springfield, O., has increased its capital stock from $50,000 to $100,000.

Iron and Steel.

Press dispatches from Dubuque, Ia., report that the Iowa Iron Works are building six steel hulls for the United States Government, to be used for steam tenders in river service. The same company is finishing the steel hull of a passenger steamer for Natchez (Miss.) parties. An electric light plant is being installed at these yards so that a night force can be put on.

Chicago papers state that ground was broken Oct. 5 for a new electric plant for the Illinois Steel Co. at South Chicago, to be of brick, 50 ft. by 135 ft., to cost, with equipment, about $200,000, and to be completed this fall.

The American Iron & Steel Co. has been incorporated in New Jersey, with a capital of $1,000,000, to engage in all kinds of mining and manufactures. The incorporators named are: Willim Fillingham, Kenneth McLauren and Harry W. Moon. A newspaper states that the names of the men behind the company do not appear in the incorporation papers, and that the names given above are the names of clerks in the office of the Corporation Trust Co. of Jersey City, with which the new company is registered.

According to a Birmingham dispatch, the Alabama Steel & Ship Building Co. filed Oct. 7, in the Probate office, an agreement which stipulates that in payment for $490,000 worth of its preferred stock, to which the Tennessee Coal, Iron & Railroad Company has subscribed, the latter shall furnish the former for 30 years, at 10 per cent. less than market prices, the coal, ore, coke, limestone and pig iron necessary to make 1,000 tons of steel per day in the Steel Company's mill. The Tennessee Coal, Iron & Railroad Co. also agrees to furnish gas for 120 by-product coke ovens at Ensley, free of charge.

New Stations and Shops.

According to the Springfield (Ill.) Journal, the plans and specifications for the new Illinois Central freight depot, to be built in that city, are completed, and bids have been asked.

The Louisville & Nashville, the North Alabama and the Southern have decided on plans for a new Union depot to be built in Sheffield, Ala. Work has not yet been commenced.

Some time ago we stated that the Cincinnati, Hamilton & Dayton was considering the building of a new freight station at Indianapolis, but that nothing definite had been done. A letter sent last week to an official of the company brought the answer that he could advise us of nothing new in regard to this.

The Board of Control of the Union passenger station of Atlanta, Ga., has decided to make some improvements, to cost about $17,000.

Last week we reported the rumor to the effect that the Southern Pacific shops at Ogden would be enlarged, necessitating the putting up of a new building. We are officially informed that there is no truth in this rumor, but that the few tools in the old district repair shops at Carlin, which have been abandoned and dismantled, will be moved to Ogden.

Last week we noted an article in the Des Moines (Ia.) Leader, which stated that plans for new car shops for the Chicago, Rock Island & Pacific, to be built at Valley Junction, had been completed. An officer of the company states that plans have not yet been prepared, and, as he understands it, nothing will be done this year in the way of further improvements at that point.

The Duluth, Missabe & Northern is considering the building of new shops at Duluth, for which drawings have been prepared, but we are officially informed that nothing definite has been decided upon, and that no building will be undertaken before next summer.

We are officially informed that, although the Great Northern expects to build a station at St. Cloud, Minn., the matter has not been decided yet.

Plans for the new Union station to be built in Dayton by the Dayton Union Railway Co. have not yet been fully decided upon.

The receivers of the Baltimore & Ohio have adopted plans and are about ready to let the contract for a new $100,000 inbound freight station, 600 ft. long, 42 ft. wide and six stories high, in Baltimore, on the site of the present inbound station on Eutaw street, between Camden and Barre streets. The new building will have a cold storage plant in the basement, the upper floors will be used as a storage warehouse and all freight will be loaded and unloaded from wagons under cover. The tracks will be so arranged that 75 cars can be unloaded at one time.

Interlocking.

The Standard Railroad Signal Co., 49 Wall street, New York City, has taken contracts to put up interlocking signals for the Erie road at Cameron, N. Y., and at Garfield Junction, N. J., where connection is made with the New York, Susquehanna & Western.

Interlocking signals have been put in near Puebla, Mex., where the Mexican Railway is crossed by the Interoceanic and the Mexican Southern. The Interoceanic road is putting in some block signals at stations.

Locomotives in Russia.

At the end of 1897 there were 9,276 locomotives on the Russian railroads, not including Finland and the Trans-Caspian line. Of these, 2,197 were compound engines and 239 narrow gage engines. Of the whole number 41 per cent. burned coal for fuel, 35 per cent. petroleum, 24 per cent. wood, while 6 engines burned peat. Russian works built 4,680 engines, or a little more than one-half of the whole number. Of the other 4,596, no less than 2,203 were built in Germany.

Electricity on the Metropolitan District Railway.

An extraordinary general meeting of the District Railway Company was held in London on Sep. 29, to obtain the sanction of the proprietors to the creation of additional capital for the construction, jointly with the London, Tilbury & Southend Railways of the Whitechapel and Bow Railway, and also to approve of a resolution to enable the District Company to work its system by electrical power. Mr. J. S. Forbes presided. He said that in connection with this new extension the question again came to the front as to the use of electrical traction. They had, no doubt, seen what had taken place in the last few months. The extraordinary fine weather and the coal strike in Wales had punished their traffic. The use of Welsh coals had choked their tunnels. The adoption of electrical traction would get rid of those disadvantages. He thought the salvation of the District Company, and the Metropolitan Company, too, depended to a certain extent on the substitution of electricity for steam. They had powers to adopt the electrical system, and one of the objects of the reso-

lutions before them was to put that into effect, which would involve £500,000 in the case of the District Railway; but the directors did not desire to ask the shareholders to incur that cost until they had before them the report of such eminent electrical authorities as Sir Woolf Barry and Mr. Preece, the electrician of the Post Office.

Oiling the Roadbed.

The Dustless Roadbed Company of Philadelphia has put its entire business in the hands of the Q & C Company. This company has already treated several hundred miles of track with oil, and the Q & C Co. is now negotiating for large additional quantities. We have so often told our readers about this treatment and its progress that a further note now would be superfluous.

Automatic Brakes in Russia.

A report from St. Petersburg says that the Minister of Transportation has determined that all freight cars on the State Railroads be equipped with automatic brakes, and that $1,276,500 has been appropriated for this purpose in 1899. At the end of 1895, less than one-seventh of the locomotives and less than two-fifths of the passenger cars on Russian railroads had automatic brakes and not one freight car in a thousand.

The Drainage Canal Bridge, Chicago.

Judge Payne, sitting in the Superior Court, Chicago, granted an injunction Oct. 10 restraining the trustees of the Sanitary District from proceeding with the work of building the eight-track bridge under the contract awarded to Scherzer. Suit for injunction was brought by a taxpayer, and the injunction is granted on the ground of the illegality of the contract. The latest information which we have indicates that the case will be carried up to a higher court.

Why Air Brakes Are Cut Out.

The following is Mr. Thomas' report of air brake cars cut out on the Nashville, Chattanooga & St. Louis Railway, leaving Nashville yard during September, 1898:

Number of air brake cars forwarded	4,518
Number of air brake cars O. K.	4,505
Air brake cars cut out	13
Average serviceable air brake cars to train	9.1

Of the 13 cars cut out, there were:

Triple valve blowing through emergency port, air brake company No. 1	1
Check valve case broken, air brake company No. 2	1
Triple valves out of order, air brake company No. 3	5
Triple valve would not fit reservoir, seat had not been faced, air brake company No. 1	1
Triple valve body broken	1
Main piston and valve of triple valve gone	1
Train pipe broken	2
Brake rigging out of order	1
Total	13

Of the 13 cars cut out:

7 belonged to railroad companies.
6 to private car lines.

Of the air brake cars forwarded:

348 were equipped with apparatus of air brake company No. 1 (New York).
16 with apparatus of air brake company No. 2 (Boyden).
7 with apparatus of air brake company No. 3 (Landsberger).
1 with apparatus of air brake company No. 4 (Haberkron).
4,112 with apparatus of air brake company No. 5 (Westinghouse).
4 with apparatus of air brake company No. 6 (Crane).

A Large Pneumatic Hammer.

The Chicago Pneumatic Tool Co. has just completed some trials in its own shops at St. Louis of a large size Boyer pneumatic hammer, which will be put on the market as No. 000. This hammer is intended for heavy riveting and chipping on structural work, and requires no yoke or other supporting frame. It is the largest hammer so far made for hand work and has a piston 1¼ in. in diameter by 5 in. long, a piston travel of about 5 in. and the piston makes 1,600 strokes per minute; the weight is 10½ lbs. With it and a pneumatic holder-on 1-in. steel rivets have been driven in seven seconds, and we are told that the vibration which was such an objectionable feature of the early hammers has been practically eliminated. The air pressure used in these trials was 80 lbs. per sq. in., but 100 lbs. is recommended for use whenever it can be readily obtained. The ease with which the field rivets of structural work can be driven by compressed air tools has made it necessary to bring out a hammer of increased power without a yoke or supporting frame. Heretofore the largest size hammer has been the Boyer No. 0, weighing 8½ lbs., and with which ¾-in. rivets could be driven.

THE SCRAP HEAP.

Notes.

The roadbed of the Ohio River Railroad is being sprinkled with oil.

The Union Pacific has discontinued the running of freight train crews through from Cheyenne to Rawlins, 193 miles. These long runs were begun about three months ago.

According to a St. Louis paper, about $5,000 in money, jewelry and checks was stolen from passengers on a sleeping car on the West Shore Railroad between Rotterdam and Buffalo on the night of October 6.

The express companies doing business in Minnesota have made annual reports to the State Railroad Commission, as required by law, but they do not separate Minnesota business from that which is interstate, and the figures therefore seem to be of little value. The Adams, for instance, reports expenses within the state as $15,444 and payments to railroads of $22,366, but the gross earnings, which are those only on business originating and terminating within the state, are only $25,318.

One hundred and sixteen suits were brought against the Louisville & Nashville Railroad at Birmingham, Ala., for damages for personal injuries in the train wreck at Newcastle, Ala., Aug. 28. The train was carrying the Sixty-ninth Regiment of New York Volunteers, and the suits were all brought by soldiers or their representatives. The aggregate amount of damages claimed was $105,950. A few minutes after the court opened, the railroad company compromised all of the cases and they were withdrawn.

The Kentucky Court of Appeals has rendered a decision, holding constitutional the Kentucky statute requiring railroads to provide separate coaches for negroes. The law was passed in 1892, and the decision is on an agreed case testing its validity. The court holds that the law applies to interstate passengers, as long as they are in the jurisdiction of the state, taking issue on this point with Federal Judge Barr, who two years ago declared the law invalid. The case now decided is likely to be appealed to the Supreme Court of the United States.

Press dispatches indicate that yellow fever has been rapidly spreading in many counties of Mississippi during the past week or two, and that passenger traffic is greatly diminished. The disease appears to be of a mild type and but few deaths are reported, but the people are as cautious as in past years, and local quarantines have been established at scores of places. It is said that the State Board of Health has forbidden travel by railroad, but this does not affect interstate travel. Many local passenger trains have been taken off, apparently nearly all trains of this class, but at last accounts all of the principal roads were running one or two through passenger trains each way daily. The crews of trains have to be changed at relay stations outside the cities. On trains from New Orleans to the North and East the passenger cars are locked and kept closed until they have passed through Alabama and Mississippi. Texas maintains a rigid quarantine against New Orleans. The Texas & Pacific is said to be doing no passenger business in Louisiana, except that one train makes a 40-mile trip daily.

Fast Run on the Lehigh Valley.

On Saturday, Oct. 8, a special train of the Lehigh Valley was run from Buffalo to Ithaca, N. Y., 148 miles, in 2 hours 46 minutes, including two stops, aggregating 12 minutes. From Buffalo to Rochester Junction, 69 miles, the time was 67 minutes. The distance of 105 miles from Buffalo was traversed in 102 minutes, including a stop of five minutes at Rochester Junction.

An Excursion for Freight Agents.

Several hundred local freight agents, assistants and billing clerks in and near Chicago were last week taken by special train on a two days' trip to inspect the stations and yards, and the arrangements for handling freight, of the Elgin, Joliet & Eastern, the Chicgao Belt, the Chicago Terminal Transfer and the Chicago Junction railroads. The trains were furnished by the Chicago, Milwaukee & St. Paul and the Chicago & Northwestern, but the Michigan Central, the Pennsylvania and the Wisconsin Central appear to have been associated with these two as entertainers.

Railroad Supplies for Australia.

Consul Halstead writes from Birmingham, England, that the Victorian and South Australian Governments will ask for tenders for railroad material in the course of October, and that the material, including rails and girder work, is intended for relaying Government lines and the development of the agricultural districts.

A Trolley for San Juan.

Press reports state that George Keck, George Willets and Allen Reid of Chicago, representing an American syndicate, have purchased the railroad running from the center of San Juan, Porto Rico, to the village of Rio Piedras, seven miles distant. The line is now operated by steam, but electricity will soon be substituted.

Franklin Institute.

The Franklin Institute and the Central Branch Y. M. C. A. of Philadelphia have arranged jointly for a fall course of popular stereopticon lectures, to be held each Friday evening during the months of October and November. By this arrangement the Institute will have an excellent audience room, and the lectures will be well advertised, while on the other hand the Association will receive the influence and support of the Institute. The lecture last Friday evening was on "Electricity and Civilization," by Prof. John B. DeMotte, Bryn Mawr, Pa.

The New Cincinnati Water Works.

The Cincinnati Commercial Tribune says that the Water Works Commissioners of Cincinnati contemplate having all divisions of the new water works under construction within the next six months. They have let the contracts for the four pumping engines for the California station; for the pump pit, the intake and tunnel under the Ohio River, for the grading of the water works ground and for several other features, the last being for the viaduct of the side track to the pumping station. Bids will soon be asked on settling basins, the western pumping station at Pendleton, the gravity conduit and the filter beds. The question of filtering is now under investigation, and the tests are not completed. The Commissioners find some difficulty in deciding whether the gravity conduit should be placed under ground, as has been suggested by Chief Engineer Bouscaren, or above ground on a trestle across Turkey bottom.

Railroad Tax Assessments in West Virginia.

The State Board of Public Works of West Virginia has made its return of the assessment of railroad property for taxation. The total this year is over a million dollars less than for 1897, the figures being for 1897 $22,709,573; for 1898, $21,625,824.

The Congo Railroad.

A company has been formed in Belgium to build a branch of the Congo Railroad, to extend from the latter line at Boma northwest 37 miles to navigable waters of the Chiloango River, an affluent of the Congo, unnavigable in its lower course. It is proposed to make it of 60 centimeters (24 in.) gage, while the Congo Railroad is of 75 centimeters, though the ground is not difficult.

The Soo Canals Traffic.

The following is a report of freight traffic to and from Lake Superior for the month of September, 1898, including statistics of the United States and Canadian canals at Sault Ste. Marie, Michigan and Ontario. We give the quantities only of the more important articles:

East Bound.

		U. S. Canal.	Canadian Canal.	Total.
Grain	Bushels.	2,469,461	67,572	2,537,033
Flour	Barrels.	841,252	196,855	1,037,907
Iron Ore	Net tons.	1,587,291	133,149	1,720,440
Lumber	M. ft. B. M.	139,544	219	139,763
Wheat	Bushels.	8,523,001	1,376,999	9,900,000

West Bound.

		U. S. Canal.	Canadian Canal.	Total.
Coal (hard)	Net tons.	63,527	12,010	75,537
Coal (soft)	Net tons.	357,109	53,565	410,674

East bound, net tons		2,465,466
West bound, net tons		552,750
Total, net tons		3,018,216
Registered tonnage—United States	2,389,691	
Registered tonnage—Canadian	282,737	2,672,428

Railroad Taxes in New Hampshire.

The New Hampshire State Board of Equalization has made up the assessments of railroad property for taxation for the present year. The total valuation, which includes the four street railroads in the State is $21,850,000. Of this amount $446,111 appears to be taxed in the towns, and the State tax is assessed on the remainder. The total amount of the State tax is $353,164. The salaries and expenses of the Railroad Commissioners appear to be an additional charge on the railroad companies, apportioned according to their gross receipts. The total amount of this item is $7,479, of which the Boston & Maine pays $5,604.

The North Sea Canal.

The traffic through the North Sea Canal seems very great when we learn that 19,960 vessels passed through it in 1897, but not so imposing when we find that the average capacity of these vessels was only 91 tons—not half that of an Erie canal boat. This indicates that the canal serves the coasting trade chiefly. All but 10½ per cent. of these vessels were German, but these vessels were especially the little ones, their average capacity being only 70 tons; while the average of the British, French and Russian vessels, presumably on long voyages, was 615 tons.

Chicago Street Improvements.

Commissioner of Public Works McGann, of Chicago, has asked for bids for paving 28 streets with granite, brick, asphalt and cedar, for which ordinances have been ordered by the Board of Local Improvements. At a meeting of the Board, Oct. 5, it was decided to repave many more streets, the greatest improvement suggested being the repavement of Halsted street from Van Buren street south to the river. Property owners on this street are allowed until Oct. 26 to decide on the material to be used, and asphalt will probably be selected. It has recently been decided that where streets are to be improved by good permanent pavements, all electrical wires along the street must first be placed in underground conduits, so that the pavement need not be taken up for that purpose later.

Winthrop Harbor (Ill.) Improvements.

In our issue of April 22, 1898, p. 300, we published a short note regarding this work in connection with the proposed Chicago, Waukegan & North Shore electric railroad. A prospectus has now been issued by the interests which are engaged in developing this property, from which the following data are taken: Winthrop Harbor is between eight and nine miles north of Waukegan, Ill., and comprises 2,725 acres owned by the Winthrop Harbor & Dock Association. It has a front of 1½ miles on the lake. The water is 20 ft. deep to within 1,500 ft. of the shore, and it is estimated that the necessary piers and a channel 400 ft. wide can be constructed for $130,000. The plans for this work are being prepared under the direction of J. H. Van Vlissingen, of Chicago, who informs us that no contracts for harbor improvement will be let until next spring and that the first work will be limited to the construction of two parallel piers extending 1,500 ft. from shore to the 20 ft. depth, with a channel dredged between. It is expected that the Chicago, Waukegan & North Shore Railway will build an electric road from Waukegan Harbor to Kenosha, 16 miles, which will complete the electric road between Chicago and Milwaukee.

Faster French Steamers.

A bill was introduced in the French Senate this Summer for expediting the Trans-Atlantic mail service between New York and Havre. It was shown that in 1886 the French line had a greater speed than any of its rivals at that time, but it has since been distanced by them until it is now fifth in point of speed.

As compared with the Kaiser Wilhelm der Grosse, the swiftest vessel of the French line, La Touraine, stands sixteenth in the list. The swiftest vessels take the bulk of the passenger traffic, and it was shown that the French line from 1891 to 1897 lost more than one-third of its passenger travel. The cost of a change in speed increases in a much larger ratio than the increase in speed. Thus when the speed is changed from 12 to 21 knots, a difference of 75%, the cost increases 300%. The French line, however, has decided to put on two new ships, which will be running by the time of the opening of the Exposition, to be followed later by two others. These will have a speed at least equal to the best of those of the competing Trans-Atlantic lines.

Electric Traction in Trieste.

The Trieste Tramway Company has received from the authorities of the city of Trieste permission for the introduction of electric power on the company's lines; also a concession has been obtained for 5 km. of new line. At present, the proposition is before the Minister of Railroads, and the company hopes to begin the work during this season.

Filled Cattle.

The United States District Attorney at Chicago has begun suits against the Chicago & Northwestern for keeping cattle on the cars without feed and water for more than 28 hours. It is stated at the District Attorney's office that the responsibility for not attending to the cattle rests on the man who was in charge of them, but that the Government holds the railroad company blamable for not seeing that the law was complied with. The agent of the Agricultural Department, who investigated this case, found that the animals were not watered at Clinton, Ind. (on the way from Omaha), although they were fed; and this was explained by one of the men in charge by the statement that "They fill better at Chicago." In other words, an animal which is very thirsty will drink a large quantity of water, and it is advantageous to the seller to have this drinking done immediately before the animals are sold.

Technical Schools.

Pratt Institute.—In both the day and the evening courses more applicants have applied than could be accommodated, the facilities in mechanical and electrical courses in particular being limited. In the evening courses there are about 100 students in the trade classes and a few over 150 in the science and technology classes, the number in each class being limited to about 24.

The Clarkson School of Technology, of Potsdam, N. Y., has just completed its new chemical laboratory with tables capable of accommodating 32 students at a time and locker drawers for 128. The new hoods for 20 students at a time are connected with exhaust fan and very complete and convenient. The floor is of the renowned Potsdam sandstone, which is unaffected by acids.

In the University of Illinois at Urbana, Ill., the engineering courses now have 113 in the entering class. In architecture there are 18, civil engineering 27, electrical 38, mechanical 27 and municipal and sanitary engineering 3. The whole number entering the university is 375.

Ohio State University.—In the first year's class 154 have been enrolled; last year this number was 113. These are distributed among the departments as follows: Civil engineering, 24; electrical, 57; mechanical, 30; mining, 10; industrial arts, 2; chemistry, 6; architecture (three years), 8; mining (two years), 12, and industrial arts (two years), 4. The total number in the university is now 309, a third of whom are in the electrical engineering course; last year there were 288 in attendance.

Water Supply for Philadelphia.

Mr. J. C. Trautwine, the chief of the Water Bureau of Philadelphia, has filed a report in which an estimate is made of the cost of installation of filtration plants, together with certain recommendations to the Council. The estimates and recommendations are made after a careful study of the results of more than 80 American cities and towns using filtration. The general conclusion is that the average cost of building the proposed filtration plants may be taken as $12,500 per million gallons of maximum daily capacity, including all necessary connections and buildings, but no provision for sedimentation or for repumping. His estimates are based, first, on the amount of water used, and second, on the amount of water used and wasted. In the latter case the amount is more than twice the former. Chairman Bringhurst, of the Water Committee of Councils, states that he is not in favor of establishing mechanical filtration plants, believing that sand filtration is the most satisfactory way of purifying water.

Surveys have been made by the Fairmount Park Commission, which is to give West Philadelphia an adequate water supply. It is proposed to build the basin with a capacity of 100,000,000 gallons.

Starting Gas Engines.

A Belgium ministerial decree which aims at suppressing a supposed danger, forbids starting gas or petroleum engines by pulling on the spokes of the fly-wheel, and some one who writes as a specialist to the Organe Industriel, draws attention to the great injury the carrying out of this decree may entail in the numerous industries in which such engines are used. It appears that no distinction is made in the decree between large or small engines; and if aimed to regulate the manner of starting the former it is amusing, while if it has reference to the latter it is pitiable. Has it come to that stage where in Belgium a man cannot start his own engine in the manner best suited to the circumstances of the case, and especially if there is no way provided to do it by mechanical means? We know the inconvenience of starting even a small engine by pulling on the spokes, but we have yet to learn of its serious dangers. As for large engines, we have seen as many as four men tugging away at the fly-wheel, with the result that after a couple of turns an explosion occurred and the engine ran without further trouble. The engineer looks on amused at such efforts and wonders why the makers of similar engines still proclaim that gas is the motive power of the future. Of course, all familiar with this class of work know that in this country the reliable engines of the larger powers have self starters of some kind, usually in the form of compressed air stored in a reservoir, connections with which are made with the cylinders of the engine.

Separate Cars for Negroes.

The separate railroad coach law has been in operation in Georgia for many years, and even before it went into effect white people and negroes were as completely separated while traveling on railroads as they are now. The railroads are impartial in the enforcement of this law. Conductors will put a white man out of a coach set apart for negroes just as promptly as they will eject a negro from a coach for white persons. The separate coach law has just gone into force in South Carolina, but it has very little practical effect, as custom had already worked a separation of the races on railroad trains.

Still the law is a good thing, for it provides, as does the Georgia law, that the accommodations for whites and blacks must be equal. This species of legislation seems to be perfectly satisfactory to the great majority of negroes. It is a very rare thing to find a negro in Georgia who insists upon taking a seat in a "white" car, though the car for the people of his race is just as good. There is growing among the negroes a commendable spirit of self-respect which deters them from the effort to force themselves where they know they are not wanted.—Atlanta Journal.

Safety Third Rail Electric Company.

Papers incorporating the Safety Third Rail Electric Co. of New York have been filed with the Secretary of State. This company owns the J. McL. Murphy third rail patents. The company has a capital of a million dollars, and its Directors are E. McMillin, E. McMillin, Jr., W. F. Doughirt, C. T. Scoville, R. H. Beach, W. M. Keepers, D. F. Halstead, L. Steckler and J. McLeod Murphy, all of New York City.

Lake Vessels for Ocean Service.

The Atlantic Transportation Company, a New York company engaged in the coastwise coal trade, has chartered seven steamers and 35 schooner barges from the lakes, which are to be transferred to the Atlantic between Oct. 1 and Nov. 15, for ocean service. Most of the vessels have been chartered for three years with privilege of purchase at the end of that time at a fixed price. These vessels vary in capacity from 800 to 2,000 tons, and it is said that the 42 vessels have a tonnage capacity on the lakes of 850,000 gross tons, and that the charter price will range upward from $250 a month each. Some will pass through the lower locks of the St. Lawrence River, but some, being too long, will have to run the rapids. They will be taken to Boston, New York and Newport News, and will be used for general trade and for coal freighters, in place of vessels which have been put into other trade since the beginning of the war. The need being for vessels to go into service at once, the most feasible plan to get them quickly was to take them from the lakes, where, if necessary, new vessels can be built to take their places by the time navigation opens next season.

The Atlantic Transportation Company has at present 46 vessels engaged in carrying coal.

The Steamer Tennessee.

A fine large steamer, the Tennessee, has lately been finished for the Baltimore Steam Packet Company's service on Chesapeake Bay, between Baltimore and Norfolk. It is 2,000 h. p. and 1,400 tons measurement, and a speed of 18 miles an hour when loaded. It is propelled by twin screws, and can be turned in a much smaller area than a single screw steamer. The Tennessee is modeled with a flare in the hull which gives much greater width above the water line than is usual, without interfering with the speed. This feature will render the vessel extremely seaworthy. It is built of steel, with lengthwise and crosswise water tight bulkheads, is finished in hard woods and will have accommodations for 300 passengers, in addition to a large freight capacity. The vessel was built by the Harlan & Hollingsworth Company of Wilmington, Del.

Wilmington Harbor Improvements.

Bids were opened Oct. 10 at the U. S. Engineer office at Wilmington, for dredging the Christiana River and improving the harbor of Wilmington. The appropriation of $205,000, granted by the last Congress, will be expended for the work, and a channel 100 ft. wide and 18 ft. deep at low water will be dug from the mouth of the Christiana River to a point above Wilmington. It will take about a year to complete the work, and above 1,000,000 cu. yds. of material will be removed.

A New Ferry Between San Francisco and Oakland

The Realty Syndicate is the corporate title of a company formed in Oakland to establish a ferry between Oakland and San Francisco in competition with the Southern Pacific. It is proposed to put on steel screw steamers, double deckers, built exclusively for passenger service. The company has acquired 200 acres of land in Emeryville, a part of Oakland, on the harbor front, and, it is stated, members of the company have secured large interests in the street car lines. Among the stockholders are Frank M. Smith, who is President of the Oakland Transit Co., a consolidation of the principal street car lines of Oakland, and who, it is reported, recently acquired control of the California & Nevada Railroad. Others interested are W. H. Martin, H. C. Miner, William G. Henshaw, William J. Dingee, J. C. Winans, C. E. Tinkham, Delos Palmer, Charles Camden. Messrs. Martin and Winans are also interested in the Oakland street railroads.

Train Wreckers in England.

A press dispatch of Sept. 19 says: Great Britain has been startled by a series of railroad outrages. On the North Western and Midland roads in the neighborhood of Northampton, there have been several attempts to wreck passenger trains. Obstructions were placed on the track and one express train plowed through a barricade but did not leave the rails. The police have not obtained the slightest clew to the perpetrators, though a hundred detectives have been at work. Consequently a panic prevails.

South American Notes.

A valuable handbook on the laws of Central America has just been issued by the British Foreign Office, prepared by Consul Trayner.

The province of Santa Fé railroad system (Argentina), is to be declared a national railroad by the Minister of the Interior, as the line now connects the province of Santa Fé with a portion of the Chaco national territory.

The project for a railroad from the upper terminus for steamboat navigation on the Magdalena River, Colombia, to the plateau of Bogotá, has again been revived, a concession for its construction having been granted to Sir Juan Bautista y Truco.

The city of Pará, Brazil, has decided to offer the water works, formerly operated by the municipal authorities, for sale to private parties, tenders being invited up to Nov. 10. A law has also been passed making the supply of water to all houses obligatory, and making the minimum monthly consumption obligatory for each house 8,000 liters, (equals 2,113.42 gals.).

The Buenos Ayres Great Southern Railroad has so far completed its extension into the Neuquen territory that it is announced that it will be ready for traffic by March next. The military value of the road, which evidently influenced the Government in its grant of concessions for its construction, is of less consequence now, since the practical settlement of the difficulties with Chile over the boundary question.

To Traveling Salesmen.

You are regarded by some at a high value and by others as an evil, a necessary evil. You cost money, and whether you bring in orders or not, your salary and your expenses go on just the same, eating up the profits of the business. You are out for orders, and you think with getting them your responsibility ends. The firm must take care of your orders, must fill them, settle any misunderstandings, take the chances of collections, in short, take all the chances of getting back not only your salary, but the salaries of the workmen in the manufactory, the interest on the money invested in the business, the taxes, insurance, wear and tear of machinery, losses on poor accounts, depreciation of stock and materials.

Did you ever think of this seriously? All the worry, the care and detail must be born by somebody. Somebody must stake everything and wait patiently for any return for their own hard work and capital invested. When traveling men appreciate this fact they begin to be really valuable to any firm.

The man who stands up and asserts that after he has turned in his order the firm has no further claim upon him, may be right according to the strict letter of the law, but he is not the most valuable salesman the firm could employ, and the firm knows it. The man who takes no further interest in the business than to do no more than is absolutely required of him to enable him to hold his position is not the man the firm will ever tie to, so to speak.

In these days, in any day for that matter, and all the time, the traveling salesman who takes off his coat and says to himself, I will do anything in my power to help the firm that employs me as if it was my own business, that salesman we say is bound to become an indispensable man. Not only the orders on the road, but the credits and collections, and a thousand and one things come under his eye, and he can give valuable advice and suggestions in all these matters. When he is at the manufactory between trips there is always work to be done, and he will pitch into it, and make himself as valuable at headquarters as on the road. That is the ideal salesman, the one who ought to have an interest in the business, or sometime know just how to successfully run one of his own.—Ad Sense.

Bicycle Transportation in Germany.

The Prussian State Railroads have just adopted new rules for the transportation of bicycles in baggage cars, and some American railroad men will, when they read them, utter a fervent prayer that the railroads of this country may soon be blessed with government management. The charge for all distances is 50 pfennigs (12 cents), which is paid at the ticket office for a "bicycle ticket." On receiving this ticket, which is given only with a ticket for passage, the holder, at least 15 minutes before the train starts, must take the wheel to the baggage office to be labeled with the name of the station to which it is going. Lanterns and all baggage except the tool-bag must be detached. Then he must himself take it to the platform where the baggage is loaded into the car. There a baggage man receives it and gives the wheelman a check, which declares that the railroad is not responsible for damage to the unpacked wheel. In case of changing cars, the wheelman must himself transfer his wheel from one baggage car to the other. The bicycle ticket, as well as the passage ticket, must be presented to be punched at the platform gate, and only on presenting it at destination is the wheel delivered. It having been objected that these regulations are calculated to prohibit rather than facilitate the transportation of bicycles, on the part of the railroads it was answered that the passenger trains have been so overwhelmed with bicycles of late that it became absolutely necessary to limit traffic in some way if the trains are to run on time.

LOCOMOTIVE BUILDING.

On July 15 and 29 we mentioned that the Oregon Short Line was considering buying some new locomotives. This road has now asked bids on 8 heavy ten-wheel engines for freight service.

We are officially informed that the order for engines for the Atchison, Topeka & Santa Fe, previously referred to in these columns, will probably be awarded the latter part of this week.

The Chicago, Milwaukee & St. Paul is building at its West Milwaukee shops six 6-wheel switching engines like the five ordered from the Baldwin Locomotive Works and referred to in our issue of June 24. They will have 18-in. x 24-in. cylinders, 50-in. driving wheels, straight top boilers, working steam pressure 180 lbs.; fireboxes, 78 in. long and 41 in. wide; tank capacity for water, 2,900 gals.; coal capacity, 8,000 lbs.; weight, 103,700 lbs. Westinghouse brakes, Janney engine and tender couplers, No. 8 Ohio injectors, Jerome metallic piston and valve rod packing, Leach sanding devices, Nathan lubricators and C., M. & St. P. standard brake beams, brake shoes and headlights will be used. The road has also ordered two more 10-wheel compound locomotives from the Baldwin Locomotive Works.

The specifications for the 30 simple consolidation locomotives, for which the Atchison, Topeka & Santa Fe received bids on Sept. 28, call for cylinders 21 in. in diameter by 28 in. stroke; drivers 57 in. in diameter outside of tires; engine truck wheels 30 in. in diameter, and tender truck wheels 33 in.; driving wheel base 15 ft. 2 in.; total wheel base of engine 23 ft. 3 in.; weight on drivers, 145,000 lbs., and total weight about 163,000 lbs.; boilers straight top; working steam pressure 180 lbs.; firebox 103 in. long and 55 in. wide at crown sheet; heating surface of firebox 165 sq. ft.; heating surface of tubes 1,740 sq. ft., and total heating surface 1,905 sq. ft.; grate area 29.23 sq. ft.; tank capacity for water 5,000 gals.; fuel bituminous coal. Westinghouse air brakes for tender and train; American driver brakes; Ross-Mehan brake shoes; Nathan Simplex injectors and Nathan No. 9 triple sight feed lubricators; Jerome metallic piston and valve rod packing; Crosby safety valves; Houston sanding device; Rushford feed water heater; and Burden iron rivets are specified. Also, cast steel wheel centers with steel tires. The pistons, crossheads, engine truck frame pedestal, equalizer and radius bar will be cast steel; and smoke box front and door pressed steel. Staybolts will be of double refined iron.

CAR BUILDING.

The Fitchburg will build 100 furniture cars.

The Union Pacific has issued specifications for 500 coal cars.

It is reported that the Mexican Northern will order 200 freight cars.

According to report, the Delaware & Hudson will order 300 more coal cars.

The Columbus, Hocking Valley & Toledo is in the market for 50 more box cars.

It is reported that the Missouri, Kansas & Texas is about to order 500 more freight cars.

Pullman's Palace Car Co. is building three standard parlor cars for use on the Baltimore & Ohio.

It is stated that the Burlington, Cedar Rapids & Northern will order three coaches and one baggage car.

The Northwestern Elevated (Chicago) has asked for bids on from 125 to 150 cars, to be opened Oct. 14. (See Sept. 30 issue.)

The Ensign Mfg. Co. of Huntington, W. Va., has received an order from the Southern Pacific for 300 36-ft., 30-ton stock cars.

The Hammond Packing Co. has ordered 75 refrigerator cars, with the privilege of increasing the order to 100, from the Michigan-Peninsular Car Co.

Of the 100 cars which the Chesapeake & Ohio will build at its shops, as stated Sept. 30, 25 will have Buckeye trucks, 10 Cloud trucks, and 10 Sterlingworth steel trucks. The balance will have Chesapeake & Ohio standard trucks; 10 with Simplex bolsters, 10 with American steel bolsters, 10 with the road's standard bolsters, and the balance with Flitch bolsters.

In our issue of Oct. 7 we noted that the Norfolk & Southern was about to order 100 freight cars. This order has been placed with the Ensign Mfg. Co. of Huntington, W. Va. They will be box cars of 60,000 lbs. capacity. The general dimensions will be: Length over body, 34 ft. 9¾ in.; length over end sills, 36 ft. 5 in.; width over body, 9 ft. 1 in.; width over side sills, 8 ft. 11¾ in.; centers of trucks, 24 ft. 8 in.; centers of truck wheels, 5 ft.; diameter of wheels, 33 in.; axles, M. C. B. standard; journals, 4¼ in. x 8 in.; 12 ft. 3 in. high from rail to running board, 34½ in. high from rail to center of drawhead. The underframing will be of long leaf Georgia pine, end sills of Georgia pine and body bolsters of white oak; Dunham door fixtures. C. B. Hutchins & Sons' roofs, Detroit couplers, Thornburgh coupler attachments, coil springs, made by either the A. French Spring Co. or the Detroit Steel & Spring Co.; Westinghouse air brakes, solid brake beams, Christie brake heads, Congdon brake shoes will be used. The trucks will be of rigid diamond pattern, entirely of iron with the exception of the bolsters, which will be of oak; French or Detroit springs, McCord journal boxes, phosphor bronze journal bearings and wheels of 33 in. diam. and of 600 lbs. weight, guaranteed for four years' service, will be used.

BRIDGE BUILDING.

BUFFALO, N. Y.—The Grand Island Bridge Commission, consisting of Rear Admiral J. G. Walker, Col. Jared A. Smith, Corps of Engineers, and Henry L. Marindiu, of the Coast and Geodetic Survey, has reported in favor of draw or pivot spans 200 ft. in the clear, and its findings have been approved by the Secretary of War. This is substantially what the friends of the bridge project wanted.

CAHABA, ALA.—Press reports state that an iron bridge will be built across the Cahaba River, between Beloit and Cahaba, at a cost of $4,500.

CHICAGO, ILL.—Bids will be received until Dec. 7, by the Clerk of the Sanitary District of Chicago, Security Building, Chicago, for substructure, superstructure, auxiliary work and materials for the change of the Van Buren street approach span across the by-pass along Chicago River. Specifications and plans my be obtained at the office of the Chief Engineer, Security Building, after Oct. 31.

CINCINNATI, O.—It is stated that the Cincinnati, New Orleans & Texas Pacific will at once make extensive repairs to bridges between Cincinnati and Chattanooga.

JERSEY CITY, N. J.—Mr. Edlow W. Harrison, Chief Engineer to the Board of Chosen Freeholders of Hudson County, submitted a report to the board recently on the project of building a loop to the Boulevard, extending from Thirteenth street, Hoboken, to the Paterson Plank road. To make this extension of the Boulevard a viaduct 1,840 ft. long, including approach, would have to be built.

It is reported that Mortimer Lampson, Commissioner of the Street and Water Board, has had plans prepared for a proposed viaduct on Communipaw avenue, to be about 1,600 ft. long and to cost $90,000.

LONDON, ONT.—The Lake Erie & Detroit River Ry. Co. will erect a steel bridge over the Thames River on the Erie and Huron Division.

M'KEE'S ROCKS, PA.—The McKee's Rocks Borough Council has taken the preliminary steps toward building a bridge at Turner Station, where the Pittsburgh & Lake Erie tracks cross the street.

MOLINE, ILL.—Sealed bids will be received until Nov. 30 by W. L. Marshall, Major of Engineers, at the U. S. Engineer Office, 1637 Indiana Ave., Chicago, for the removal of the Moline wagon bridge across Rock River and for building a new bridge in its place.

OAKLAND, CAL.—Bids will be received until Nov. 7 for building a bridge over the Estuary of San Antonio on the line of Webster St., between Oakland and Alameda. Frank C. Jordan, Clerk to Supervisors of Alameda County.

PETERBOROUGH, ONT.—The Town Engineer has been instructed to prepare plans and estimates of cost for an iron bridge, with concrete abutments, over the raceway on London St.

PHILADELPHIA, PA.—The Survey Committee of the Councils has indorsed an appropriation bill for 1899 which includes, among other items, one for bridge building amounting to $810,000. Mr. Geo. S. Webster, Chief Engineer of the Bureau of Surveys, at the meeting of the committee read a list of bridges which have been asked for by Councils, the total estimated cost of which was $2,248,000.

SALEM, VA.—Bids are asked by the Commissioners of Roanoke County until Oct. 22, for building two iron bridges across Mason's Creek.

SAN FRANCISCO, CAL.—Reports state that the Southern Pacific will shortly build in different parts of California 12 steel bridges, aggregating over a half mile in length, and costing over $300,000. The bridges are, in all cases, to replace old ones. One bridge will be over the San Joaquin River, near Fresno, with three spans of 160 ft. each, and one span of 50 ft. The fourteenth, fifteenth and seventeenth crossings of the Sacramento River in the Mt. Shasta region, each supplied at present with a metal span 140 ft. long, are to have heavier steel spans. Present bridges are to be transferred to Southern Arizona and there rebuilt where needed on the road. Another bridge is to cross the Stanislaus River near Oakdale; several others will be built, and some improved.

WICHITA, KAN.—The Wichita Ry. Light & Power Co. will make extensive repairs to the bridge across the Big Arkansas River, and it is possible that a new bridge may be built. W. Q. Church is President of the company.

RAILROAD LAW.—NOTES OF DECISIONS.

A Texas statute, among other rules to govern the operation of railroads, provides that "the locomotive's whistle shall be blown and the bell rung at the distance of at least 80 rods from the place where the railroad shall cross any public road, and such bell shall be kept ringing until it shall have crossed such public road or stopped." On the trial of an action to recover damages for injuries sustained in a crossing collision, the court charged the jury—referring to this statute—that "the law requires that persons running railroad engines shall, when within 80 rods of a public crossing of the railroad, blow the whistle and begin to ring the bell." A verdict against the railroad company is set aside by the Appellate Court on the ground that this instruction was tantamount to an assertion of an obligation resting upon the company to blow the whistle at some point nearer than 80 rods to the crossing, there being no such obligation (decided by the Supreme Court, May, 1898).[1] While it cannot be disputed that an accurate sense of the value of words is a most important quality in a trial judge, so strict a requirement in this particular as is insisted upon by the decision noted in this paragraph may be properly regarded as fanciful and arbitrary. At any rate, there is no indication in the opinion of any condition at the trial which would have tended to lead the jury to place upon the words used any such construction as that discovered by the Appellate Court.

The Arkansas statute, which requires a constant lookout to be kept from locomotives running upon any railroad in that state, for persons and property upon the track, and declares any company which fails to keep such a lookout liable for any injury arising from such failure, is held not to apply in a case where a drunken trespasser was run over and killed. His negligence in getting into such a condition is a good defense. The statute is not intended to do away with the rule of law which absolves a defendant from liability for any injury to which the negligence of a plaintiff contributes, irrespective of the fact of its own negligence (decided by the Supreme Court, July, 1898)[2]. In the absence of statute a railroad company is under no obligation to keep a constant lookout for persons on its tracks, whether they be trespassers or not. It may assume, in general, that people will keep out of the way of its trains, and need only take such measures to avoid a collision as are possible after the danger is discovered and imminent. Such a statute is in force in a few states. There is no such statute in New York.

In Kansas, when a railroad company enters upon and uses land for its right of way, without any proceeding to condemn it and without making compensation, the landowner may regard such taking as a permanent appropriation of the land and recover damages for the full value thereof. He must, however, begin his action within five years after the entry (decided by the Court of Appeals, August, 1898)[3].

At the trial of an action in a Federal court, brought by the plaintiff to recover damages for the death of her son, it appeared that the son, a brakeman, was killed by falling at night from a freight train made up of 12 or 14 cars. It further appeared that one of these cars, over which he had to pass in the course of his work, was defective in having no running board, and that the fact of its presence in the train amounted legally to negligence on the part of the railroad company. Proof of these facts is held to be insufficient to warrant an inference that the brakeman slipped from the roof of the defective car, and in the absence of other proof a verdict is directed for the defendant (decided by the Circuit Court, Tenn., May, 1898)[4].

It is held by a Federal court that, unless authority from the company which employs him be shown, the act of a street railroad conductor in causing the arrest of a former passenger immediately after ejecting him from the car for refusing to pay fare is the conductor's individual act and outside the course of his employment, so that no action will lie against the company for malicious prosecution or false imprisonment. It is further held that the fact that a clerk of the company endeavored to convince the magistrate that the conductor was right in causing the arrest did not amount to a ratification of the conductor's unauthorized action, where the clerk was merely directed by his superior to go to the police court "and see what the matter was," but only amounted to an imitation of the conductor in departing from his employment without authority (decided by the C. C. A., 2d Circ., June, 1898)[5]. The decision of the Appellate Court in the action of Cane vs. Railroad Company, 40 Atl. 780, reported in this department of the Railroad Gazette, September 16, 1898 (in which case a verdict was rendered assessing damages for a wrongful ejection from the defendant's train, an important element of the plaintiff's claim arising from his subsequent arrest under circumstances similar to those of the case noted here), sets aside the verdict as excessive, the jury having found a larger amount than would reasonably compensate the plaintiff for his injury, as a punishment to the defendant. It will be observed that in the present case the court goes much further, in holding that there is no liability whatever on the part of the railroad company for such an arrest. It is true that here the action was for false imprisonment, but the inference is fair—since the arrest was unauthorized—that, even if the plaintiff had sought his remedy in the way adopted by the plaintiff in the Cane case, the court would have declined to consider the arrest as an element of damage.

In South Carolina damages are allowed for injuries occasioned by fright which was caused by the negligence of a railroad company, although no physical injury was sustained except that caused by the fright (decided by the Supreme Court, April, 1898)[6]. It may be stated as a general rule that mere terror or mental distress, occasioned by the negligence of another, furnishes no ground of liability. In cases where such suffering produces physical effects the authorities are conflicting, both in England and in the United States. The conclusion reached by the majority of jurisdictions is opposite to that of the South Carolina case noted in this paragraph, for example New York[7] and Massachusetts[8].

[1] Houston & T. vs. O'Neal, 47 S. W., 95.
[2] St. L., I. M. & S. vs. Jordon, 47 S. W., 115.
[3] A., T. & S. F. vs. Lauterback, 54 Pac., 11.
[4] Rogers vs. L. & N., 88 Fed., 462.
[5] Lezinsky vs. Metropolitan, 88 Fed., 437.
[6] Mack vs. South Bound, 40 L. R. A., 679.
[7] Mitchell vs. Rochester Ry., 151 N. Y., 107.
[8] Spade vs. Lynn & B., 168 Mass., 285.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Berkshire.—Quarterly 1½ per cent., payable Oct. 15.
Chicago & Western Indiana.—Quarterly, 1½ per cent., payable Oct. 1.
Choctaw, Oklahoma & Gulf.—Semi-annual preferred, 2½ per cent., payable Oct. 31.
Cincinnati, Sandusky & Cleveland.—Semi-annual preferred, 3 per cent., payable Nov. 1.
Cumberland Valley.—Quarterly, 2 per cent., payable Oct. 1.
Northern Pacific.—Quarterly, preferred, 1 per cent., payable Dec. 5.
Old Colony.—Quarterly, 1¾ per cent., payable Oct. 1.
Sioux City & Pacific.—Preferred, 3½ per cent., payable Oct. 1.
Union Pacific.—Preferred, 1½ per cent., payable Oct. 31.

Cincinnati St.—Quarterly, 1¼ per cent., payable Oct. 1.
Cleveland City.—Quarterly, ¾ per cent., payable Oct. 10.
National Ry. (St. Louis).—Quarterly, 1½ per cent., payable Oct. 10.
North Chicago St.—Quarterly, 3 per cent., payable Oct. 15.

American Society of Civil Engineers.

At the meeting of the Society Wednesday evening, Oct. 5, the Board of Direction presented to the Society the ticket made up by the Nominating Committee, to be voted on at the annual meeting in January. This ticket is as follows:

For President, Desmond FitzGerald, Boston, Mass., District No. 2.

For Vice-Presidents, Robert Cartwright, Rochester, N. Y., District No. 3, and Robert Moore, St. Louis, Mo., District No. 6.

For Treasurer, John Thomson, New York City, District No. 1.

For Directors, District No. 1—John A. Bensel, C. W. Buchholz, Samuel Whinery, all of New York City.

For Director, District No. 2—Edmund K. Turner, Boston, Mass.

For Director, District No. 3—Palmer C. Ricketts, Troy, N. Y.

For Director, District No. 7—James D. Schuyler, Los Angeles, Cal.

Engineers' Club of St. Louis.

The 476th meeting was held Oct. 5, 1898, at 8 p. m., with President Bryan in the chair. Sixteen members and two visitors were present. A letter was read from Mr. Charles L. Bouton, who had been appointed a delegate from the Engineers' Club of St. Louis to the Fiftieth Anniversary Celebration of the Society of Civil Engineers of France.

The President stated that the Missouri Historical Society had invited the Club to participate in the arrangements for the celebration of the Louisiana Purchase.

The discussion of the smoke abatement movement in St. Louis was then taken up. Mr. Eugene McQuillan, the attorney of the Citizens' Smoke Abatement Association, addressed the Club in regard to the legal questions involved. He stated that an ordinance had been passed by the Municipal Assembly several years ago which prescribed a punishment for the emission of dense, black smoke. Several convictions had been secured under this ordinance and the smoke nuisance had been largely abated, until on an appeal case the Supreme Court of Missouri decided that the Municipal Assembly had exceeded its rights under the city charter in passing the ordinance. Mr. McQuillan stated that a new ordinance was in course of preparation and is soon to be introduced in the Municipal Assembly.

Remarks on the subject of Smoke Abatement were made by Col. E. D. Meier, Messrs. Robert E. McMath, Robert Moore and M. L. Holman.

New York Railroad Club.

The next regular meeting of the Club will be held at 8 o'clock p. m., Thursday, Oct. 20, 1898, at the rooms of the American Society of Mechanical Engineers, 12 West Thirty-first street, New York City. Mr. H. B. Hodges will present a paper on the subject of "The Purchase and Inspection of Railway Supplies."

New England Railroad Club.

At the regular meeting of the Club, held at Pierce Hall, Boston, Oct. 11, discussion was had on the paper by Chas. E. Copp, General Foreman Painter B. & M. R. R., on "Present and Future Economy in Railway Equipment Painting." Extracts from the paper appear on page 736 of this issue.

St. Louis Railway Club.

At the meeting of the Club, to be held at Washington University, St. Louis, on Friday, Oct. 14, the day on which the Railroad Gazette for this week is dated, Prof. C. M. Woodward will deliver an address on the subject: "What Shall We Do With Our Boys?" This meeting is expected to be attended by the ladies. The Manual Training School, Prof. Johnson's engineering laboratory and the St. Louis Art Museum will be visited.

The November meeting of the Club will be held on the 11th in the parlors of the Southern Hotel. A paper will be presented, entitled "Organization of a Railroad Engineering Department." The paper presented at a former meeting by Prof. R. A. Smart, entitled "The Performance of a Four-Cylinder Compound Locomotive," will be discussed.

The Engineers' Club of Philadelphia.

A regular meeting of the Club will be held on Saturday, Oct. 15. The paper will be on "The Construction of the Pennsylvania Avenue Subway and Tunnel, Philadelphia" (illustrated), by George S.

Webster. A lunch will be served after the meeting.

Mr. Webster extends an invitation to members of the Club to inspect the subway and tunnel work along the line of Pennsylvania avenue on Saturday afternoon, Oct. 22, after meeting at the club house at 1.30 o'clock.

At the meeting of Oct. 1, besides the paper by Mr. Josiah Dow on the "Dow Steam Engine and Chronometric Governor," a paper was presented by Mr. John C. Trautwine, Jr., on "Popular Errors About Water Meters."

Northwest Railway Club.

A meeting of the Northwest Railway Club was held Tuesday evening, Oct. 11, at the West Hotel, Minneapolis. Prof. J. J. Flather of the University of Minnesota presented a paper entitled, "Rules for Belting," in which equations were given for determining the width of leather belting under various conditions of practice. The loss due to centrifugal effect at high speeds, the influence of the arc of contact, the size of the pulleys and the character of the joints, whether laced or cemented splice, are taken into account in the expression derived by Prof. Flather for the width of belts. The topic, "The Disciplining of Enginemen and Trainmen," was discussed.

American Institute of Electrical Engineers.

A meeting of the Institute was held in New York on Sept. 28, at which time a paper was presented on "The Photometry of the Inclosed Alternating Arc" by Messrs. C. P. Matthews, W. H. Thompson and J. E. Hilbish. As a result of their investigation the writers conclude that lamps of this type could, by improvement in the mechanism, be made equal in performance to the most efficient lamp considered. They state: "If the power consumption of the alternating arc were raised from 327 to 384 it is very probable that the mean intensity would be raised from 110.5 to a considerably higher intermediate value. . . . If the alternating arc be regarded apart from any regulating device the physical reasons for its poor qualities as a light source are to be found in the lower temperature of the glowing points and in the diminished area of the crater surface."

Western Society of Engineers.

At the regular meeting of the Western Society of Engineers, Oct. 5, a paper was read by Mr. L. H. Evans, Engineer of Track Elevation of the Chicago & Northwestern, on the "Track Elevation of the Chicago & Northwestern and the Pittsburgh, Cincinnati, Chicago & St. Louis Railway." Mr. Evans' paper was one of unusual interest and attracted the largest attendance had at any regular meeting of the Society during the past two years, there being 147 present. The paper was illustrated with 24 stereopticon views, showing very clearly the most interesting features of the work done under his direction during the past three years. This work includes the elevating of over 12 miles of main line, most of which is three track, while several miles is five-track line. In these 12 miles 72 subways have been provided for street crossings, involving over 30,000 tons of steel. We shall abstract Mr. Evans' paper quite fully in a subsequent issue.

Mr. Evans' paper was followed by those of Mr. W. L. Webb, Mr. W. A. Rogers and Mr. A. F. Reichman, Engineers of the Chicago, Milwaukee & St. Paul, describing the track elevation work being done this year by that road. These papers were illustrated by nine stereopticon views. A paper was also read by Mr. W. H. Parkhurst, Engineer of Bridges of the Illinois Central, describing the elevation of the tracks of that road, which tracks were raised during 1892 and the early part of 1893. This paper was also elaborately illustrated by stereopticon views. Mr. Parkhurst further presented notes on the elevation of the St. Charles Air Line tracks in the business part of Chicago, made necessary by the elimination of the grade crossings at Sixteenth and Clark streets. The last paper read was by Mr. G. H. Bremner, Engineer of Track Elevation of the Chicago, Burlington & Quincy, and dealt with the work being done by, and proposed for next season on that road. The only work being done this year is the putting in of foundations, preparatory to the work of elevating tracks next season.

Additional papers were to have been presented describing the work of the Chicago, Rock Island & Pacific and Lake Shore & Michigan Southern; the joint elevation of these roads and the Chicago & Alton, Atchison, Topeka & Santa Fe, St. Charles Air Line, and Chicago & Western Indiana Ry. at the Sixteenth street crossing; and the elevation of the Pittsburg, Ft. Wayne & Chicago. For lack of time these papers had to be held over until the next meeting of the Society, at which time the entire subject will be open for general discussion.

On Saturday, Oct. 8, a party of 150 members and guests of the Society accepted the invitation of the Chicago & Northwestern to take a special train and make an inspection of the work done on this line and on the line of the Chicago, Milwaukee & St. Paul. The train left the Chicago & Northwestern depot at 1 p. m. After making the run to Rose Hill Station on the Milwaukee Division, the train returned to Clybourn Junction, stops being made at Ravenswood and Lincoln avenue. From Clybourn Junction the train was taken over the Wisconsin Division as far as Mayfair station, where it was switched over the "Mayfair cut-off" to Forty-fourth avenue west and the Galena Division, and then over this line to Rockwell street, where the tracks of the Chicago & Northwestern and the Pittsburgh, Cincinnati, Chicago & St. Louis are parallel. These tracks were jointly elevated under the direction of Mr. Evans.

Frequent stops were made all along the way so that the work could be critically examined. After having gone over all of the work done on the Chicago & Northwestern, the train was switched onto the tracks of the Chicago, Milwaukee & St. Paul, and a thorough inspection was made of the work being done by that road. This work is especially interesting because of the fact that concrete abutments are being used exclusively at the subways. We shall abstract from the papers describing the work on this road which were read at the meeting of Oct. 5 in a later issue.

Among the railroad engineers in the party who have charge of track elevation work were Messrs. L. H. Evans and W. H. Finley of the Chicago & Northwestern; Onward Bates, W. S. Webb, W. A. Rogers and A. F. Reichman of the Chicago, Milwaukee & St. Paul; E. J. Blake and G. H. Bremner of the Chicago, Burlington & Quincy; W. H. Coverdale of the Pennsylvania Lines, and H. C. Draper, Chief Engineer, Chicago & Alton. Also, among others, there were Messrs. Ferd. Hall, Chief Engineer Chicago, Indianapolis & Louisville, J. W. Alvord, ex-City Engineer Artingstall, Edw. Wilmann, E. L. Cooley, T. L. Condron, E. Gerber, Carl Haller, H. E. Horton, M. Lassig, Chas. H. Mercer, L. P. Morehouse, T. W. Snow, C. L. Strobel and C. V. Weston.

A second trip is planned to take the members of the Society over the elevation work in the southern portion of the city. This trip will probably be taken Oct. 22 or 29.

The meeting of Oct. 21 will be a ladies' evening, and Mr. George S. Morison will give an illustrated lecture on Masonry.

PERSONAL

—Mr. R. A. Cole, Traveling Auditor of the Seaboard Air Line, died at Carey, N. C., at the age of 30.

—Mr. Chas. F. Parker, an electrical engineer and member of the Engineers' Club of New York, died in New York, Oct. 10. He was 35 years of age.

—Mr. C. W. Sanford, who has been Superintendent of the Kansas City Car Service Association, has been appointed Superintendent of the Association at Chicago.

—Chief Engineer W. H. Cline, U. S. N., retired, died in the Long Island College Hospital Oct. 6. He was born in Baltimore Sept. 3, 1837. He entered the navy in 1861.

—Mr. H. G. Barrow has been appointed General Freight Agent of the Interstate Transportation Co. Mr. Barrow was lately Traveling Freight Agent of the Yazoo & Mississippi Valley at New Orleans.

—Mr. Paul J. Myler, at present Secretary of the Westinghouse Mfg. Co., Ltd., at Hamilton, Can., will succeed Geo. F. Evans as Manager when the latter leaves for St. Petersburg, Russia, to establish a plant there.

—Capt. Joseph U. Crawford, Chief Engineer of the Norfolk & Portsmouth Belt Line, has been selected by the Government to go to Cuba. He will assist in determining the condition of the railroads in Cuba and their facilities for the transportation of troops.

—Mr. Luther C. Burgess, Superintendent of the National Hollow Brake Beam Co., of Chicago, died on Oct. 3 at his home at Ravenswood, near Chicago, after an illness of several months. Mr. Burgess was born at Hancock, N. H., in 1847, and since 1875 he has lived most of the time in Chicago. Since the organization of the National Hollow Brake Beam Co. he had charge of the sales department of that company.

—Mr. A. W. Stedman, at one time Chief Engineer of the Lehigh Valley, died at Mauch Chunk, Pa., Oct. 7. Early in life he became connected with the Lehigh Valley as a Levelman, and from 1866 to 1881 he served as an Assistant Engineer. In 1881 he became Chief Assistant Engineer, remaining in that position until 1883, when he was appointed Chief Engineer. Mr. Stedman occupied that position for 10 years, when he left railroad service. He was 54 years old.

ELECTIONS AND APPOINTMENTS.

Alabama Great Southern.—Chas. E. Rickey has been appointed Assistant Superintendent, succeeding H. B. Spencer, resigned, with headquarters at Birmingham, Ala. Mr. Rickey was heretofore Chief Clerk to Superintendent Wickersham at Birmingham.

Atchison, Topeka & Santa Fe.—C. L. Carmean has been appointed Passenger Agent, with office at Cleburn, Tex., vice H. K. Rowley, transferred. H. K. Rowley has been appointed Passenger Agent at Galveston, Tex., vice M. Naumann. Geo. C. Dillard has been appointed City Passenger Agent at 377 Broadway, New York. C. L. Chambers has been appointed Passenger Agent at Peoria, Ill. H. S. Van Slyck has been appointed Traveling Freight and Passenger Agent, with headquarters at San Francisco, Cal., succeeding J. L. Blair.

C. F. Warren has been appointed General Agent, Salt Lake City, Utah, succeeding Joseph Brinker. Mr. Brinker has been appointed Assistant General Live Stock Agent, with headquarters at Kansas City.

J. F. Yale has been appointed Soliciting Freight Agent at Dallas, Tex. C. H. Carringer has been appointed Soliciting Freight Agent at San Antonio, Tex., in place of Mr. Yale, transferred.

Augusta Southern (South Carolina & Georgia).—C. W. Jackson has been appointed General Freight and Passenger Agent for the Receivers, with office at Augusta, Ga. F. A. Healy, Auditor of the S. C. & G., has been appointed Auditor for the Receivers, in addition to his present duties, with office at Charleston, S. C.

Baltimore & Ohio.—John C. Richardson has been appointed Superintendent of Docks at Cleveland, O.

Baltimore, Chesapeake & Atlantic.—W. L. Rothstein, heretofore Acting Auditor, has been appointed Auditor, and Harry A. Hopkins has been appointed Cashier.

Canadian Pacific.—H. H. Abbott has been appointed Freight and Passenger Agent at Portland, Ore., succeeding Geo. L. Courtney, resigned. (Sept. 23, p. 695.)

Chicago & Northwestern.—D. D. Cutler has been appointed Traveling Freight Agent, with office at Cedar Rapids, Ia., succeeding F. L. Stayner. J. C. Mitchell has been appointed City Passenger and Ticket Agent at Council Bluffs, Ia.

Chicago, Burlington & Quincy.—E. W. Farnham has been appointed Superintendent of Car and Special Freight Service, succeeding Geo. R. Ross, resigned.

B. L. Crosby has been appointed Assistant Auditor at St. Joseph Mo., succeeding Geo. B. Dunbar. (Oct. 7, p. 730.) C. G. Weaver has been appointed Traveling Auditor in place of F. C. Marshall, and W. H. Roche has been appointed Assistant Traveling Auditor, succeeding Mr. Weaver, both having headquarters at Chicago.

Chicago Junction.—P. H. Duggan, Superintendent of Tracks at the U. S. Yards, Chicago, has resigned.

Michael Murphy has been appointed Roadmaster, with headquarters at 40th and Halstead Sts., Chicago. The office of Superintendent of Tracks and Bridges, held by the late P. H. Duggan, has been abolished.

Chicago, Milwaukee & St. Paul.—Geo. W. Cross has been appointed Assistant Commercial Agent, with headquarters at Chicago, Ill.

Chicago, Rock Island & Pacific.—E. F. Strain has been appointed Commercial Agent, with office at Colorado Springs, Col., in place of W. W. Wood, heretofore General Agent at that point.

R. B. Forbes has been appointed Contracting Agent at Des Moines, Ia., succeeding T. O. Jennings, promoted. (Sept. 30, p. 713.)

Cincinnati, Hamilton & Dayton.—D. S. Wagstaff, General Traveling Agent, with headquarters at Toledo, O., has resigned. He will leave railroad service.

Cincinnati, New Orleans & Texas.—C. A. Agley, Traveling Freight Agent at Cincinnati, O., has been transferred to Pittsburgh, Pa. W. H. Dunavant, Traveling Passenger Agent at Cleveland, will shortly be removed to Pittsburgh, Pa.

Cleveland, Akron & Columbus.—H. B. Rox has been appointed General Agent at Zanesville, O.

Cleveland, Cincinnati, Chicago & St. Louis.—W. G. Knittle has been appointed Traveling Passenger Agent, with office at Dallas, Tex., succeeding A. J. Whitehead. C. S. Rogers has been appointed General Agent, with office at Detroit, Mich., succeeding H. J. Rhein.

A. C. Boggs has been appointed Foreman in charge of depots, succeeding Joseph Masten, deceased. His headquarters are at Cincinnati, O.

Cobbossecontee.—At a meeting held at Gardiner, Me., Oct. 5, organization of this new company was effected (Sept. 23, p. 714.), and officers elected as follows: President, R. H. Gardiner, Boston; Clerk and Treasurer, W. E. Maxcy, Gardiner. The directors are: R. H. Gardiner, S. D. Warren, Charles A. Deane, Boston; J. S. Maxcy, Joshua Gray, H. E. Merriam and Frank E. Boston, Gardiner.

Colorado Midland.—O. A. Brown, General Agent at Salt Lake City, Utah, has been appointed General Agent at Denver, Colo.

Detroit & Lima Northern.—W. S. Allen, Auditor, has resigned. He is succeeded by Frederick Seymour, with office at Detroit, Mich. C. H. Roser, Chief Engineer, has been appointed Purchasing Agent in addition to his present duties, succeeding C. W. Taylor, resigned, with office at Detroit, Mich.

The offices of Division Superintendent and General Train Dispatcher will be moved from Detroit, Mich., to Lima, O. The Auditor's office, heretofore located in Tecumseh, Mich., will also be transferred to Lima.

Detroit, Toledo & Milwaukee.—A. J. Bandy has been appointed Chief Clerk in the Passenger Department, with headquarters at Toledo, O.

Erie.—J. W. Platten has been appointed Assistant Purchasing Agent of the Erie lines, with headquarters at 21 Cortlandt St., New York.

Florida East Coast.—C. Ironmonger has been appointed Eastern Passenger Agent at 319 Broadway, New York. W. A. Fletcher has been appointed Western Passenger Agent, with office at 220 South Clark St., Chicago. C. H. Merritt has been appointed Traveling Passenger Agent, with headquarters at St. Augustine, Fla.

Gainesville & Gulf.—L. E. Baker has been appointed General Freight and Passenger Agent, with headquarters at Gainesville, Fla. He succeeds J. F. Bunch, resigned.

Georgia and Alabama.—E. P. Burns has been appointed Commercial Agent at Atlanta, Ga.

Georgia Southern & Florida.—J. E. Roach has been appointed Traveling Passenger Agent, with headquarters at Jacksonville, Fla.

Grand Trunk Junction (Grand Trunk).—At the annual meeting held in Chicago Oct. 4, Arthur Dixon was elected a Director, in place of W. Beasley, resigned.

Great Northern.—James Robinson has been appointed Traveling Freight Agent, with headquarters at Grand Forks, N. D.

Geo. Williams, formerly Chief Clerk to the General Passenger Agent of the Northern Steamship Co., Buffalo, has been appointed Traveling Passenger and Immigration Agent, with headquarters at Philadelphia, succeeding C. B. Cameron. Oct. 7, p. 731.)

Houston & Texas Central.—F. B. Goodrich has been appointed Assistant Engineer, with headquarters at Houston, Tex.

Intercolonial.—Wm. Robinson, heretofore Division Freight Agent at St. John, N. B., has been transferred to the Freight Department in Toronto, Ont., and the office of Division Freight Agent at St. John has been abolished.

Kansas City, Osceola & Southern.—J. W. Geary, Assistant Superintendent, with headquarters at Clinton, Mo., has resigned.

Lackawanna Line.—R. A. Whitman, heretofore Agent for the West Shore Fast Freight Line at Peoria, Ill., has been appointed Agent of the Lackawanna, with headquarters at the same point. J. J. Byrne has been appointed Agent, with headquarters at Indianapolis, Ind.

Lake Shore & Michigan Southern.—W. B. Hutter, heretofore City Ticket and Passenger Agent of the Eastern Minnesota at Duluth, has been appointed Northwestern Passenger Agent at St. Paul, Minn.

Lakeside & Marblehead.—F. A. Sterling, Cleveland, O., was elected a Director at the annual meeting held in Cleveland, O., Sept. 28. He succeeds Geo. N. Smalley, Boston.

Louisville & Nashville.—C. A. Swope, heretofore Chief Clerk in the Freight Department at Louisville, Ky., has been appointed Traveling Freight Agent, with headquarters in New York. He succeeds H. Mead.

Louisville, Henderson & St. Louis.—J. E. Cox has been appointed General Western Passenger Agent, with office at St. Louis, Mo., in place of C. H. Jones.

Manistee & Grand Rapids.—A. D. Hart has been appointed Superintendent and Master Mechanic, with headquarters at Manistee, Mich., vice W. H. Herbert, resigned.

Mexican Central.—John R. McDonough, Chief Clerk in the Freight Department at Mexico City, has resigned. He is succeeded by Geo. Dwan, Chief Clerk in the Freight Department, Mexican National.

Mexico, Cuernavaca & Pacific.—J. B. Phipps, General Freight and Passenger Agent, with headquarters at Mexico City, has resigned. John R. McDonough, heretofore Chief Clerk in the Freight Department of the Mexican Central, has been appointed General Freight and Passenger Agent, succeeding Mr. Phipps.

Michigan Central.—I. Greenbaum, heretofore Freight Solicitor at Grand Rapids, Mich., has been appointed Contracting Agent. The office of F. M. Briggs, General Agent at that point, is abolished. (Oct. 7, p. 731.)

The office of Assistant Trainmaster at Montrose, Ont., has been abolished. F. S. Brown has been appointed Trainmaster in place of T. E. Scott, transferred, with office at St. Thomas, Ont. R. A. Barrett has been appointed General Yard Master at Montrose, with the same supervision over employees as the Assistant Trainmaster formerly had.

Missouri, Kansas & Texas.—J. W. Walton, heretofore Chief Dispatcher on the Dallas & Mineola Division, has been appointed Trainmaster, and A. C. Sessions, heretofore Second Train Dispatcher, has been made Chief Train Dispatcher, succeeding Mr. Walton. The headquarters are at Denison, Tex.

Missouri Pacific.—W. L. Flannary has been appointed Secretary to H. C. Townsend, General Passenger and Ticket Agent at St. Louis. He succeeds A. V. Brigham, promoted. (Oct. 7, p. 731.)

Mobile & Ohio.—J. T. Poe, General Freight Agent, with headquarters at St. Louis, Mo., has been appointed Traffic Manager, a newly created office. Mr. Poe's headquarters will hereafter be located at Mobile, Ala. Haiden Miller, Assistant General Freight Agent of the Southern Railway at Atlanta, Ga., has been appointed General Freight Agent, succeeding Mr. Poe, with headquarters at St. Louis.

Monterey & Mexican Gulf.—J. E. Cates, who was recently appointed Contracting Freight Agent of the Mexican National (Oct. 7, p. 731), has been appointed Traffic Agent of the M. & M. G., with office at 29 Broadway, New York. Mr. Cates succeeds Geo. W. West. Geo. W. West has been appointed Traffic Manager, a newly created office, with headquarters at Monterey, Mexico.

Nashville, Chattanooga & St. Louis.—W. H. Knox, Soliciting Agent at St. Louis, has been appointed Traveling Agent, with headquarters at Nashville, Tenn. E. D. Wolfe has been appointed General Agent, with headquarters at St. Louis, Mo. Mr. Wolfe was heretofore Commercial Agent of the Queen & Crescent at Dallas, Tex.

Nelson & Fort Sheppard.—At the annual meeting the Directors who had composed the old board before the road was purchased by the Great Northern, resigned. The new board consists of W. H. Thompson, J. D. Farrell, Albert Allen, F. H. Wilson, Major Dupont and C. H. Shields, Vice-President of the Spokane Falls & Northern. This Board of Directors will also serve as the Directors for the Red Mountain.

New York, Susquehanna & Western (Erie).—J. W. Platten has been appointed Assistant Purchasing Agent, with headquarters at 21 Cortlandt St., New York.

Norfolk & Western.—Wm. Mahone, Soliciting Agent at Petersburg, Va., has resigned. Sterling Ruffin, Agent at that point, will assume the duties of the position without title.

Northern Alabama.—N. R. Adriance, Superintendent and Traffic Manager, with headquarters at Sheffield, Ala., has resigned.

Northern Central.—John C. Auten has been appointed Supervisor, with office at Parkton, Md., vice F. W. Fite, transferred. F. W. Fite has been appointed Supervisor, with office at York, Pa., vice H. E. Passmore, deceased.

Northern Pacific.—O. S. Bressler has been appointed Chief Train Dispatcher at East Grand Forks, Minn.

Ohio Southern.—Frederick Seymour, Auditor, has resigned. He is succeeded by J. Dougal, with headquarters at Lima, O.

Frank Wilkins, heretofore Traveling Auditor, has been appointed Cashier, succeeding Mr. Dougal.

Oregon Short Line.—H. O. Wilson has been appointed General Agent at Butte, Mont., succeeding M. W. Bacon.

Pennsylvania.—C. L. Tiers has been appointed Supervisor of the Pennsylvania Schuylkill Valley RR., Philadelphia & Erie Division, with office at Pottsville, Pa., vice J. C. Auten, transferred.

Plant System.—Commercial Agents have been appointed as follows: Wilbur McCoy, at Tampa, Fla.; J. D. Sinclair at Jacksonville, Fla.; John H. Stephens at Savannah, Ga.

Reading Dispatch.—Allan Wallace has been appointed Chief Accountant, with headquarters at Detroit, succeeding A. E. Rosevear.

Sacramento Valley.—The officers of this new company, referred to in the Construction column, are: President and Treasurer, Capt. S. B. Connico; Vice-President and Chief Engineer, Dr. Theodore B. Comstock; Secretary, Judge G. W. Blakley. These three, with O. F. Kuencer and John D. Young, form the Board of Directors.

St. Joseph & Grand Island.—Fred F. Schmitz has been appointed Traveling Freight and Passenger Agent, with headquarters at St. Joseph, Mo. Henry Schultz has been appointed Joint Live Stock Agent of this road and the Santa Fe, with headquarters at St. Joseph, Mo.

St. Louis & San Francisco.—J. L. Ivers, General Agent at Cincinnati, has resigned on account of ill health.

St. Louis, Chicago & St. Paul.—Ralph Blaisdell has been appointed Auditor for Receiver Wm. H. Male, with office at Springfield, Ill. W. D. Tucker has been appointed Assistant Auditor, with office at the same place. Both appointments took effect Oct. 1.

St. Louis, Iowa & Northern.—C. J. DuBois has been appointed Chief Engineer and Superintendent, with headquarters at Macon, Ga.

St. Louis Southwestern.—At the annual meeting held in St. Louis, Oct. 4, A. W. Krech was elected a Director, succeeding Mr. Gernshein.

South Carolina & Georgia.—S. B. Lumpkin has been appointed Division Freight and Passenger Agent, with headquarters at Blackburg, S. C.

Southern.—Jas. H. Wingfield has been appointed City Passenger Agent at Washington, D. C., in place of R. C. Berkeley. W. S. Doll has succeeded Mr. Wingfield as Passenger Agent at Norfolk, Va. The offices of Passenger Agent at Atlanta, Ga., held by C. E. Sergeant, and at Nashville, Tenn., held by W. S. Doll, have been abolished.

C. G. Bradley, Commercial Agent at St. Louis, has been appointed Traveling Freight Agent at the same point, succeeding J. J. Webster. (Oct. 7, p. 731.)

P. S. Daniels has been appointed Secretary to Superintendent Geo. R. Loyal at Knoxville, Tenn.

Southern Pacific.—Assistant General Passenger and Ticket Agent L. J. Parks has been appointed General Passenger and Ticket Agent of the Galveston, Harrisburg & San Antonio, the Texas & New Orleans, and the Louisiana Western extension, with headquarters at Houston, Tex.

Texas Central.—Ramsey M. Cox has been appointed Superintendent of Transportation, with headquarters at Waco, Tex., succeeding J. W. Ravlin, resigned.

Union Pacific, Denver & Gulf.—The office of John T. Bowe, Commercial Agent, has been removed from Chicago, Ill., to St. Louis, Mo.

Zanesville & Ohio.—H. B. Rox has resigned as Chief Clerk to General Passenger and Freight Agent C. C. Harrison. George Nicholson succeeds Mr. Rox, with headquarters at Zanesville, O.

RAILROAD CONSTRUCTION,
New Incorporations, Surveys, Etc.

ALGOMA CENTRAL.—Under this name a road is to be built from Sault Ste. Marie, north in Ontario along the shore of Lake Superior, to Michipicoten River, and thence to the Michipicoten harbor. It is to run through a portion of the territory of the once proposed Sault Ste. Marie & James Bay.

ARKANSAS & CHOCTAW.—The officials have filed a map with the Governor of Arkansas, showing the route of their proposed extension. It begins at Ashdown, Ark.; enters the Choctaw Nation at some point between the Red and Little Rivers, and runs thence northwest to a point at or near Atoka, Ind. Ter., on the Missouri, Kansas & Texas. (Apr. 15, p. 285.)

ARKANSAS & OKLAHOMA.—Rails are laid from Bentonville, Ark., to Dickson, 10 miles, and grading is in progress between Dickson and Gavett, eight miles, on this line from Bentonville to Gavett. (May 27, p. 382.)

ARKANSAS CENTRAL.—Grading is reported completed on about four miles at the Paris end on the extension of this line from Charleston, Ark., east 18 miles to Paris. (Sept. 16, p. 678.)

ATLANTIC & LAKE SUPERIOR.—The extension from New Carlisle, Que., to Paspebiac Harbor is to be completed this month. The line between Paspebiac and Port Daniel, 21 miles, is being located and it is intended to build this year. There is a possibility that the grading will be done between Port Daniel and Gasby this year, so that track may be laid next spring. (July 8, p. 502.)

BRAINERD & NORTHERN MINNESOTA.—Contractors Bageley, Huebner and Lisette are reported to have begun grading on the last seven miles at the Lake Bemidji end of this line from Walker, Minn., northwest 30 miles to Lake Bemidji. (Sept. 30, p. 714.)

BUFFALO, ROCHESTER & PITTSBURGH.—The Pennsylvania Construction & Investment Co. of Curwensville, Pa., is reported to have the contract for building a three-mile link between two sections of this road at Stanley.

CANADIAN PACIFIC.—H. D. Lumsden, who has been at the head of surveying parties to obtain a good route from Toronto to Sudbury, Ont., reports that a route has been secured. The line is to run from Kleinburg, a little west of Lloydtown and Schomberg, thence to Barrie, thence straight north to Coldwater, then west of the Muskoka Lakes to Bela, and from there to Parry Sound and on to Sudbury. It is pretty well understood that building is to begin at once. (Feb. 24, p. 148.)

CANTON, ABERDEEN & NASHVILLE.—C. D. Smith & Co. of Birmingham, Ala., have received the contract to build the first 10 miles from Winfield to New River, Ala., on the proposed extension of the Aberdeen branch of the Illinois Central. (Oct. 7, p. 732.)

CAROLINA & NORTHWESTERN.—Track is laid for the entire 10 miles on the gap between Newton, N. C., and Hickory. Heretofore the trains have run over the tracks of the Western North Carolina Division of the Southern. (June 10, p. 420.)

CHICAGO & NORTHWESTERN.—Contracts are reported let for grading an extension from Denison, Ia., northeast about 80 miles to Algona. This would connect two lines of the C. & N., and give a shorter route to Sioux City.

CHOCTAW, OKLAHOMA & GULF.—Local capitalists at Hot Springs, Ark., have raised a bonus of $50,000 to be available to any company that will build an independent line from Hot Springs to Little Rock, with an eastern connection. This proposition is supposed to be in the interest of the C., O. & G., which proposes to make such extensions.

COAL RIVER & SOUTHWESTERN.—This company has been incorporated in West Virginia, with a capital stock of $1,500,000, to build a line from St. Albans to connect with the Norfolk & Western in Mercer Co., about 50 miles. Among the incorporators are Jas. Booth, W. S. Booth, H. J. Tondy and H. F. Tondy of Huntington, W. Va.

CUBAN RAILROADS.—The Government Commission under Col. Hecker, sent to Cuba to locate camp sites and provide transportation for troops, reports railroad facilities most meager, and insists upon the imperative necessity of connecting the eastern and western ends of the island by rail without delay.

DENVER & RIO GRANDE.—In President E. T. Jeffrey's annual report he states that it is proposed to relay with 85-lb. rails 28 miles of double track between Denver and Pueblo, and to have all the main tracks of the First District of the First Division, a distance of 120 miles, laid with 85-lb. steel.

EAST RICHELIEU VALLEY.—This company is said to have built 12 miles of line from Iberville, Que., to Henryville, and is to build 11 miles more to Moyan on the extension south of St. Thomas. (Aug. 19, p. 603.)

EVANSVILLE & TERRE HAUTE.—During the year 6.66 miles of 70-lb. rail was laid, displacing 60-lb. rail, and a mile and a quarter of side track was built. The Lancaster coal spur was extended one mile for the accommodation of coal traffic.

GARNER, CEDAR RAPIDS & NORTHWESTERN.—Iowa press dispatches state that a company under this name is building a line from Hayfield Junction, the present terminus of the branch of the Burlington, Cedar Rapids & Northern in Hancock Co., to run northwest 20 miles and into Cossuth Co. Crystal Lake will be a new town on this line.

GEORGIA PINE.—Track laying is reported in progress on the extension from Plattsville, Ga., north to Arlington. (Sept. 16, p. 678.)

GILA VALLEY, GLOBE & NORTHERN.—Rails are reported laid to the mouth of the Gilson wash, 11.1 miles beyond San Carlos, Ariz., on this line from Geronimo, Ariz., northeast 58 miles to Globe. The grading is completed to within six miles of Globe, with the exception of four miles through the narrows below Gilson's, which must be bridged in many places. Wm. Garland of Los Angeles, Cal., is President.

GREAT NORTHERN.—Work is to begin soon, according to report, on the extension from Coon Creek, Minn., north about 60 miles via Cambridge, to a point near Mora or Brook Park. When completed this will effect a saving of about 30 miles on the line from St. Paul to Superior. The Park Rapids & Leech Lake extension to Cass Lake on the new Fosston Branch is to be ready for trains early in November. (Oct. 7, p. 732.)

IRONDALE, BANCROFT & OTTAWA.—This line, which runs from the Grand Trunk Junction, Ont., to Baptiste, has been extended this year five miles to a point 2¼ miles north of Bancroft. (Jan. 21, p. 50.)

JALAPA RAILROAD & POWER CO.—The Mexican Government has released this company from the obligation to prolong this line to Teoclo, and the line will be extended only from Jalapa to Coatepec. (July 1, p. 485.)

LAKE BRUEN RAILROAD & TRANSPORTATION COMPANY.—This company has been organized to build a railroad from Lake Bruen, La., to a point on the Mississippi in Tensas Parish. Henry A. Garrett of New Orleans is President; J. H. Johnson Vice-President, and J. C. Hamilton, St. Joseph, La., Secretary.

MINNESOTA, IOWA & GULF.—This company, already incorporated in Iowa, has filed articles of incorporation in Missouri. The road will be 310 miles long and will tap the Kansas City, Pittsburgh & Gulf at Conception, Mo., thence run through Gaynor City to Bedford, Ia., and across Taylor, Adams, Adair, Guthrie, Carroll, Pocahontas, Sac and Dickinson counties. Messrs. D. N. Stanton & Sons, 45 Broadway, New York, have the contract. J. J. Bell of Des Moines, Ia., is President. (Sept. 2, p. 639.)

NEW ROADS.—Engineer A. V. Hoyt is reported to be surveying for a narrow gage line from Karthaus, Pa., on the Pennsylvania RR., to run west about 10 miles to timber lands of Graham & Porter, near Frenchville.

NEW YORK & OTTAWA.—Track is laid on the New York side for the entire distance from the St. Lawrence River south to Moira, N. Y., 15.4 miles. The road has also been completed from Hawthorn Junction, Ont., into Ottawa, five miles. (Aug. 12, p. 587.)

PHILADELPHIA, READING & NEW ENGLAND.—Following the purchase of this road by the reorganization committee (see News column), it is proposed to begin at once the building of an extension from Tariffville, Conn., to Springfield, Mass. (Sept. 16, p. 679.)

PORT ARTHUR, DULUTH & WESTERN.—McKenzie, Mann & Co. of Toronto, Ont., according to reports, will extend this road through the Seine and Rainy Lake regions, at least as far as the Lake of the Woods. The road runs from Gunflint Iron Mines, Minn., northeast 91.25 miles to Port Arthur, Ont.

SACRAMENTO VALLEY.—This company has been organized under the Incorporators' Act of Arizona, with a capital stock of $10,000 per mile, and an equal amount of bonds, to build a railroad from a point on the Santa Fe near Kingman, to run northwest about 50 miles along the east side of the Sacramento Valley to White Hills. It is stated that a preliminary survey is in progress, and that as soon as arrangements can be made it will probably be pushed on to the Colorado River to form a junction with the new Utah & Pacific, now building from Milford, Utah, southwest to the Nevada line. The officers are given under Elections and Appointments.

ST. LOUIS & SAN FRANCISCO.—The work of rebuilding five miles of roadway, which was washed out by heavy floods in July of the present year, on the Salem branch, will be completed in a few days. (Official.)

SAN FRANCISCO & SAN JOAQUIN VALLEY.—Contracts are reported let to Grant Bros. of San Francisco, for grading about 12 miles of road just west of Stockton on the extension toward San Francisco. John Worthington of Oakland, Cal., obtained the contract for building a number of trestles on the road between Visalia and Corcoran Junction. (Sept. 23, p. 697.)

SIOUX FALLS & PACIFIC.—This company has been incorporated in South Dakota, with a capital stock of $8,000,000, to build a line from Sioux Falls west to the Wyoming state line. The incorporators are R. E. Woodworth, H. H. Smith, C. E. McKinney, Thos. H. Brown and B. H. Lien.

TALLAHASSEE SOUTHEASTERN.—Rails are reported laid for 19 miles on this road from Tallahassee, Fla., toward the Suwanee River. The bridge over the St. Mark's River is reported completed. Jas. M. Mayo, Ocala, Fla., is Vice-President. (July 15, p. 522.)

WINNIPEG & SOUTHEASTERN.—Track laying was begun in September, and it is expected that from

30 to 40 miles will be laid this season on this new line from Winnipeg, Manitoba, southeast 80 miles to a point near White Mouth Lake. Contracts are let to St. Anne des Chenes. (May 27, p. 383.)

WINNIPEG & STONEY MOUNTAIN.—This company has obtained a charter to build a line two miles long from a point on the C. P. R., between Winnipeg and Bergen. The capital stock is $10,000. The directors are Colin H. Campbell, Daniel E. Sprague, Kenneth McKenzie, Wm. Andrew Windatt and Charles Henry Enderton.

WYOMING & MISSOURI RIVER.—Grading is completed from Belle Fourche, S. D., to Alladin, Wyo., on this line from Belle Fourche up Hay Creek Valley, 18 miles, to Barrett, Wyo., and track is laid for five miles from Belle Fourche. (Aug. 26, p. 619.)

Electric Railroad Construction.

AKRON, O.—The Akron, Bedford & Cleveland RR. Co., at present using the tracks of the Akron, St. Ry. & Illuminating Co., from Cuyahoga Falls to Akron, is working for an independent route and entrance to Akron.

ALBANY, N. Y.—The Albany, Helderberg & Schoharie Electric Ry. Co. has filed a map and profile of its proposed route with the officials of Albany and Schoharie counties, and work will be begun in the country districts in a few days. The route from Albany by towns is as follows: Normansville, Elsmere, Delmar, Slingerlands, New Scotland, New Salem, Clarksville, Helderberg post office, Indian Ladder, Thompson's Lake, East Berne, Berne, West Berne, Gallupville and Schoharie. (June 10, June 24; pp. 421, 467.)

AUBURN, N. Y.—The Auburn & Western RR. Co. has carried its case to the Appellate Court. The company was organized to build a trolley road from Auburn, across Cayuga Lake to Seneca Falls, and its application was refused by the State Railroad Commissioners on the ground that the road was not necessary for public convenience. William Nottingham is attorney for the road.

BRADDOCK, PA.—L. G. Wood, of Pittsburgh, has applied to the town of Braddock for a franchise for a trolley road that is projected to run from Wilkinsburg to Turtle Creek, through Swissvale, Haykins, North Braddock and Bessemer. (See Pittsburgh, Sept. 2, p, 639.)

DEDHAM, MASS.—The Norfolk Western St. Ry. Co. has given the contract for its track construction to H. Gore & Co., of Boston. The contract for its main buildings has not yet been let. The officers are as follows: W. W. Mitchell of Medfield, President; Joseph J. Feely of Walpole, Treasurer; Alfred C. Smith of Dedham, Clerk. (Sept. 30, p. 715.)

JERSEY CITY, N. J.—The North Hudson County Traction Co. has applied for authority to lay a single track on Grove St.

MONTVILLE, CONN.—The plans are perfected for building the new Montville Street Ry. from Norwich to New London, 11 miles, in the early spring. Soloman Lucus of Norwich, Conn., is President of the Company, and E. P. Shaw, Jr., of Boston, is Treasurer. The capital is $150,000. (Feb. 11; March 11, pp. 111, 189.)

ST. LOUIS, MO.—The Central Traction Co. has begun work on its road, Messrs. McNally Bros., the company's contractors, having broken ground on Twenty-first and Wash Sts. (Mar. 18, Aug. 5; pp. 209, 571.)

SANDUSKY, O.—Surveys are completed for the Sandusky & Interurban electric railroad between Sandusky and Huron. It is stated that contracts are being let for ties and rails. Among those interested are Wm. H. Pine, of Norwalk; C. H. Stewart, of Cleveland; E. W. Moore and H. G. Everett. (Aug. 5, p. 572.)

WASHINGTON, D. C.—Reports state that a large amount of bonds of the Belt Ry. Co. was bought recently by the syndicate owning a controlling interest in the stock. This syndicate, it is understood, is the owner of the new City & Suburban, which was chartered by act of Congress in July. (See Baltimore, Md., Apr. 1, May 27; pp. 248, 384.) The Belt Ry. will be sold at foreclosure in November, after which it will doubtless become a part of the City & Suburban. The motive power will be changed to electricity. About 15 miles of track is now operated by horses. (See Baltimore, Md., Oct. 7, p. 732.)

GENERAL RAILROAD NEWS.

Railroad Earnings.

Showing the gross and net earnings for the periods ending at the dates named:

June 30.		1898.	1897.	Inc. or Dec.
Nashville, Chattanooga & St. Louis.				
12 months	Gross	$5,646,549	$5,116,118	I. $530,431
12 "	Net	1,982,724	1,911,447	I. 71,277
Seaboard Air Line.				
12 months	Gross	$4,011,554	$3,777,641	I. $233,913
12 "	Net	1,403,650	1,000,086	I. 403,564
August 31.		1898.	1897.	Inc. or Dec.
Buffalo, Rochester & Pittsburgh.				
1 month	Gross	$351,769	$292,646	I. $59,123
1 "	Net	126,110	98,559	I. 27,551
8 months	Gross	688,014	619,203	I. 68,811
8 "	Net	250,555	214,712	I. 35,843
Chicago, Indianapolis & Louisville.				
1 month	Gross	$309,230	$306,970	I. $2,260
1 "	Net	111,250	97,485	I. 13,765
8 months	Gross	603,876	610,264	D. 6,388
8 "	Net	208,715	190,104	I. 18,611
Chicago, Rock Island & Pacific.				
1 month	Gross	$2,061,063	$1,959,914	I. $91,149
1 "	Net	969,470	911,697	I. 57,773
8 months	Gross	8,525,927	7,449,784	I. 1,076,143
8 "	Net	2,096,779	1,730,332	I. 366,447
Cleveland, Cincinnati, Chicago & St. Louis.				
1 month	Gross	$1,309,649	$1,250,007	I. $59,642
1 "	Net	363,495	296,970	I. 66,525
8 months	Gross	2,455,703	2,349,666	I. 106,037
8 "	Net	669,326	550,035	I. 119,291
Fitchburg.				
1 month	Gross	$642,308	$666,292	D. $23,884
Long Island.				
1 month	Gross	$611,407	$546,278	I. $65,129
1 "	Net	289,189	265,737	I. 15,452
2 months	Gross	1,147,406	1,072,204	I. 75,202
2 "	Net	534,937	513,011	I. 21,926
Long Island System.				
1 month	Gross	$695,987	$632,715	I. $63,272
1 "	Net	331,336	319,506	I. 11,830
2 months	Gross	1,322,004	1,242,588	I. 79,416
2 "	Net	628,363	616,938	I. 11,425
Louisville & Nashville.				
1 month	Gross	$1,866,746	$1,778,103	I. $88,643
1 "	Net	563,571	594,266	D. 30,695
2 months	Gross	3,694,413	3,573,560	I. 120,853
2 "	Net	1,077,297	1,221,983	D. 144,686
Mexican Central.*				
1 month	Gross	$1,075,479	$1,004,966	I. $70,513
1 "	Net	265,395	170,545	I. 94,850
8 months	Gross	8,833,309	8,526,385	I. 306,924
8 "	Net	2,733,532	2,615,371	I. 118,161
*Mexican Currency.				
Mexican International.*				
1 month	Gross	$281,491	$234,747	I. $46,744
1 "	Net	122,258	77,661	I. 44,597
8 months	Gross	2,215,474	2,017,559	I. 197,915
8 "	Net	868,865	760,745	I. 108,120
*Mexican currency.				
Oregon Short Line.				
1 month	Gross	$585,823	$501,415	I. $84,408
1 "	Net	270,812	175,536	I. 95,276
2 months	Gross	1,151,495	1,060,756	I. 90,739
2 "	Net	541,337	430,161	I. 111,176
Pennsylvania.				
1 month	Gross	$5,723,061	$5,858,961	D. $135,900
1 "	Net	2,264,715	2,287,915	D. 23,200
8 months	Gross	42,248,667	40,928,867	I. 1,319,800
8 "	Net	12,504,996	12,580,996	D. 76,000
Pennsylvana Co.				
1 month	Gross	.....	.....	I. $55,300
1 "	Net	.....	.....	D. 225,300
8 months	Gross	.....	.....	I. 2,312,600
8 "	Net	.....	.....	D. 296,500
Rio Grande Western.				
1 month	Gross	$272,963	$284,938	D. $11,975
1 "	Net	86,307	104,025	D. 17,718
2 months	Gross	544,770	591,735	D. 46,965
2 "	Net	172,964	241,100	D. 68,136
St. Louis & San Francisco.				
1 month	Gross	$601,266	$615,305	D. $14,039
1 "	Net	240,719	300,208	D. 59,489
2 months	Gross	1,098,801	1,143,801	D. 45,000
2 "	Net	399,012	495,681	D. 96,669
Southern Pacific.				
1 month	Gross	$4,845,374	$4,889,190	D. $43,816
1 "	Net	1,830,426	2,107,554	D. 277,128
2 months	Gross	9,311,944	9,411,399	D. 99,455
2 "	Net	3,417,337	3,921,281	D. 503,944
Western New York & Pennsylvania.				
1 month	Gross	$301,355	$314,470	D. $13,115
1 "	Net	109,118	143,556	D. 34,438
2 months	Gross	558,677	592,699	D. 34,022
2 "	Net	190,318	241,741	D. 51,423
September 30.		1898.	1897.	Inc. or Dec.
Chicago Great Western & St. Paul.				
1 month	Gross	$538,126	$521,744	I. $16,982
3 months	Gross	1,456,293	1,392,944	I. 63,349
Great Northern System.				
1 month	Gross	$2,781,592	$2,488,755	I. $292,837
3 months	Gross	6,511,364	6,045,160	I. 466,204

BALTIMORE & OHIO.—The receivers on Oct. 6 filed a reply to the petition of the state of Maryland, the Johns Hopkins University and other holders of preferred stock to prevent the foreclosure of the road. They state that the fixed charges of the company's system are greater than it can bear and that the receivers will never be able to discharge the debts without reorganization. Unless this reorganization is speedily reached, the breaking up of the system cannot be prevented more than a few months. It is alleged that the avowed object of the petitioners is to delay and thwart this reorganization. Messrs. Cornelius J. Ryan, Ludovic C. Cleeman and John Pitcairn, representing shareholders of preferred stock of the Akron & Chicago Junction, filed a petition in the United States Circuit Court at Baltimore, Oct. 3, to become co-petitioners with the state of Maryland and the Johns Hopkins University to prevent reorganization. A similar petition was filed for Alexander Torrance, who holds 2,127 shares of preferred stock of the B. & O. Judge Morris appointed Oct. 21 as the date for hearing the petitioners.

At a meeting of the protective committee for holders of the consolidated bonds of the Sandusky, Mansfield & Newark, it was decided to accept the plan of reorganization proposed by the B. & O. committee. (Oct. 7, p. 733.) The President and Secretary have accordingly issued a notice recommending the stockholders of the S., M. & N., that they change their certificates for preferred stock in the B. & O. under this plan.

CENTRALIA & CHESTER.—The Farmers' Loan & Trust Co. of New York has made application to the United States Supreme Court at Springfield, Ill., for the appointment of a new receiver for this road and asked for the removal of the present receiver, C. M. Forman. It is charged that the company has not paid the interest due on the bonds held by the Trust Co. since January, 1890. (Oct. 7, p. 733.)

CENTRAL VERMONT.—The new plan of reorganization (Oct. 7, p. 733), as adopted by the committee of which Ezra H. Baker of Boston is chairman, provides for the issue of $3,000,000 capital stock, and $12,000,000 first mortgage 4 per cent. 21-year gold bonds from August, 1898. The interest on the bonds will be guaranteed by the Grand Trunk by a trackage contract under which any deficit in earnings by the G. T. is guaranteed, up to 30 per cent. of the gross business interchanged by that company with the C. V.

Holders of the American Loan & Trust Co.'s certificates and of first mortgage Consolidated RR of Vermont bonds not deposited ($12,000,000 outstanding), are to receive par for their present bonds in the new first mortgage bonds with interest in cash at 4 per cent. per annum from Feb. 1, 1898, to the date of the new bonds. This interest has been already paid on May 1 and Aug. 1 to a majority of the certificate holders by the G. T. Holders of the bonds and certificates will receive also 8 per cent. of the face of their bonds in capital stock of the new company, representing interest overdue Feb. 1. Of the remaining $5,000,000 of the new bonds, $1,000,000 will remain in the treasury to be issued for improvements and additions, and the balance for acquiring branch roads and in settlement of preferred claims, reorganization expenses and other obligations. A meeting is called of the holders of American Loan & Trust Co. certificates of deposit of Consolidated Railroad of Vermont 5 per cent. bonds, to be held at Chipman Hall, Boston, Oct. 26, to pass upon this agreement.

DENISON & NORTHERN.—United States Judge Townsend at Ardmore, Ind. Ter., ordered the assets of this company to be sold at public auction, and appointed W. F. Bowman Special Master Commissioner for the sale. This line was originally projected to run from Denison, Tex., to a point at or near Coffeyville, Kan. It was partially graded, but no rails laid. It went into the hands of a receiver in November, 1895, and Judge Taft on March 14, 1898, issued an order annulling the appointment of the receiver. (June 17, p. 446.)

EVERETT & MONTE CRISTO.—Suit has been entered in the name of the State of Washington against this company to have its franchise forfeited, on the ground that it has failed to operate its entire line since floods washed away a portion of the track in November, 1897. The line extends from Everett Junction, Wash., to Snohomish, 11.5 miles, and from Hartford Junction to Monte Cristo, 42.39 miles. It also has trackage rights from Snohomish to Hartford Junction, 8.2 miles, making the total operated 62.09 miles. About three miles of the track at the Monte Cristo end was destroyed by the flood.

GALVESTON, LA PORTE & HOUSTON.—This property was again sold under foreclosure at Galveston, Tex., Oct. 4, to L. J. Smith, who opposed the confirmation of the previous sale of the road on July 6, to Geo. C. Holt of Woodstock, for $400,000. Mr. Smith at the time guaranteed that the new sale would bring $425,000, and this was the amount bid by him at the last sale. (Sept. 16, p. 680.)

GEORGIA & ALABAMA.—The Georgia & Alabama Terminal has been organized to build a terminal line at Savannah. Control has been obtained of about one mile of water front on Hutchinson's Island, opposite the city. The plan includes slips of size sufficient to accommodate large ocean steamers, warehouses equipped with the latest labor-saving devices and many thousand feet of wharves. The road will also build about 20 miles of line from Savannah to Meldrim to take the place of the line now leased from the Central of Georgia. The bonds of the Terminal Co. are to be guaranteed by the G. & A. It is estimated that the expenditures will be between $1,000,000 and $2,000,000.

KOOTENAY RAILWAY & NAVIGATION COMPANY.—This company, which has been formed in London to consolidate into one system the Kaslo & Slocum and the International Navigation & Trading Company's lines of steamers with the new Bedlington & Nelson line south to Bonner's Ferry, Idaho, where connection will be made with the Great Northern, is to have a capital stock of £500,000. The company is issuing £480,000 of 5 per cent. debenture stock at par. All the stock and securities of the several subordinate companies are to be acquired by the parent company. The K. R. & N. will also acquire a land grant of 220,000 acres in the Kootenay district grant, in connection with the building of its line. (Canadian Roads, Sept. 2, p. 638.)

LITCHFIELD, CARROLLTON & WESTERN.—Under the decree of foreclosure by Judge Allen in the United States Circuit Court at Springfield, Ill., the date of sale fixed is at noon, Nov. 12, at the company's depot in Carlinville, Ill. (Aug. 26, p. 620.)

MANITOBA & NORTHWESTERN.—This company's property has gone into the hands of a new company. Bond sales have been made in England and negotiations are in progress in Montreal for settlement of the legal proceedings pending between the old company and the bondholders, and it is understood that an amicable settlement has been reached. The line extends from Portage la Prairie, Manitoba, to Yorkton, 223.5 miles, with a branch from Binscarth to Russell, 11.5 miles. The line from Minnedosa to Rapid City, 15.47 miles, is leased. The company has trackage rights over the Canadian from Portage la Prairie to Winnipeg, 55.6 miles. The property has been for some time in the hands of a receiver. It is stated that the company will at once give orders for rolling stock and will make extensive improvements. The new officers were given last week.

MEXICAN CENTRAL.—The Government has sanctioned the transfer of the Michoacan & Pacific concession to this company and the line is to be built at once from Yurecaro, Michoacan, southeast 300 km. (186 miles), to Ario. According to the latest reports grading on this line has been finished for 30 km. (18.6 miles), and surveys are made for the entire distance. The concession carries a subsidy of $6,000 per kilometer, and the line must be in operation by July 30, 1905. (Sept. 23, p. 696.)

MEXICAN NATIONAL.—The Texas Railroad Commission has brought suit against the Texas-Mexican line of this company for forfeiture of charter, on the ground that the state law is not complied with which requires separate offices in Texas. The road runs from Laredo, Tex., to Corpus Christi, 162.24 miles.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—During the fiscal year ending June 30, the operated mileage was increased nearly a third, 284 miles having been taken over, bringing the total miles worked up to 1,189. The summary of the past years' results, which follows, covers identical mileage:

	1898.	1897.	Inc.
Gross earnings	$5,646,549	$5,116,118	$530,431
Operating expenses	3,663,825	3,204,672	459,153
Net earnings	$1,982,724	$1,911,446	$71,278
Interest and taxes	1,102,187	1,088,420	13,767
Rental W. & G. RR.	420,012	420,012	.....
Balance	$460,525	$403,014	$57,511
Dividends	400,000	400,000	.....
Surplus	$60,525	$3,014	$57,511

The increase of nearly 10 per cent. in gross earnings was reduced to one of less than 4 per cent. in net earnings through the larger expenses, which absorbed more than four-fifths of the added gross. Various statistics are shown below:

	1898.	1897.	Inc. or Dec.
Passenger miles	74,992,000	45,109,000	I. 29,883,000
Passengers carried	1,525,400	1,090,000	I. 435,400
Passenger-mile rate	c 1.77	c 2.34	D. c 0.57
Av. passenger journey (miles)	49	41	I. 8
Ton miles	428,977,000	285,638,000	I. 43,339,000
Tonnage	3,226,600	2,879,600	I. 347,000
Ton-mile rate	c .691	c .696	D. c .005
Av. frt. haul (miles)	133	134	D. 1

NEW YORK CENTRAL & HUDSON RIVER.—At the special meeting of the stockholders held in Albany, N. Y., Oct. 5, it was voted almost unanimously to accept the proposed new contract by which $420,000 will be saved to the N. Y. C. & H. R., and the New York & Harlem, by the refunding of the $12,000,000 7 per cents. into new 3½ per cent. bonds. By the agreement between the two companies the N. Y. C. & H. R. is to receive $220,000, and the N. Y. & H. $200,000. At the meeting of the N. Y. & H. on the same day, one of the stockholders, Thomas Hitchcock, objected to the proposed arrangement, and although about 75 per cent. of the stock was in its favor, it was decided to throw the questions raised by Mr. Hitchcock into court for settlement. (Oct. 7, p. 734.)

OREGON SHORT LINE.—The first report of the reganized company shows, after paying operating expenses, etc., and fixed charges of over 2½ millions, a balance of $1,250,000, which was sufficient to meet the interest on the two issues of income bonds and leave a balance of $159,000. The lines operated by the company, 1,438 miles, were formerly leased by the Union Pacific. In the breaking up of that system, after the receivership, the road was independently reorganized. The summary of earnings for the years ending June 30, 1898 and 1897, follows:

	1898.	1897.	Inc.
Freight earnings	$4,604,119	$4,189,075	$415,044
Passenger earnings	1,273,028	1,064,069	208,969
Gross earnings	6,317,069	5,726,248	590,811
Maintenance of way	985,887	925,382	60,505
Maintenance of equipment	568,789	502,441	66,348
Cond. transp.	1,497,475	1,564,659	*67,184
General	186,991	209,085	*22,094
Total expenses	3,239,142	3,201,568	37,574
Net earnings	3,077,971	2,524,680	553,237
Taxes	349,318	277,812	71,506
Net income	2,728,598	2,246,868	481,730
Per cent. exp. to earnings	51.3	55.9	*4.6
Per cent. exp. and taxes to earnings	56.8	60.8	*4.0

* Decrease.

Funds were available from the reorganization for a large amount of improvement work, especially for new rails, the cost of placing them in the track being charged against operating expenses, bringing the cost of track work considerably above a normal sum. Tie renewals were also unusually heavy. The amount of new rails laid was 26,335 tons in 1898, against 5,221 tons in 1897, and the renewals were 471,900, against 443,000 last year and 295,700 in 1896. The growth of the traffic in the last three years is shown by the following figures:

	1898.	1897.	1896.
Tonnage	1,534,106	1,380,500	1,498,400
Ton miles	471,681,000	383,924,000	389,589,000
Passengers carried	514,600	452,000	430,600
Passenger miles	47,104,000	36,805,000	37,786,000
Ton-mile rate	c .976	1.091	1.055
Passenger-mile rate	c 2.703	c 2.891	c 2.776
Train statistics.	1898.	1897.	Inc.
Passenger train miles	1,092,300	1,082,800	9,500
Freight train miles	1,732,900	1,495,000	237,900
Total freight car miles	54,712,900	44,619,900	10,093,000
Passenger car miles	6,701,300	5,834,800	866,500
Average freight haul	307	278	29
Average train load	245	240	5
Av. frt. train mile earn.	$2.45	$2.67	*$0.22

* Decrease.

PHILADELPHIA & READING.—The report for the fiscal year, ending June 30, and for the previous seven months, covering the whole period of the operations of that company, will be audited by independent accountants, and will be issued as soon as they are completed. The report will show the operations of the Reading Co., and will include the operations of the P. & R., and the P. & R. Coal & Iron Co.

PHILADELPHIA, READING & NEW ENGLAND.—Pierre M. Brown sold this line at foreclosure at Poughkeepsie, N. Y., Oct. 6, to Thomas Thatcher, representing the reorganization committee, for $3,807,000. The main line is from Campbell Hall, N. Y., to Silver Nails, 57.6 miles. It has leases of the Hartford & Connecticut Western, 109.75 miles, and the Dutchess County, 12 miles. It has trackage rights over the Newburgh, Dutchess & Connecticut to Millerton, N. Y., 1.25 miles, making a total length operated 181 miles. There are $4,600,000 common stock, and $2,000,000 preferred stock. The funded debt is $10,100,000. The receiver was appointed Aug. 19, 1893. (Aug. 8, p. 504.)

The Fletcher Committee announce that in view of the purchase of the property at the foreclosure sale, an additional $515,000 is required, and depositors of first mortgage bonds are asked to make payment per share as follows: On each 4 per cent. bond, $84; on each 4-5 per cent. bond, $85.50; on each 5 per cent. bond, $85.50. Payment should be made on or before Oct. 25 at the Fidelity Insurance Trust & Safe Deposit Co., Philadelphia.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—Jeffersonville, Madison and Indianapolis first mortgage bonds, a total of $225,000, have been drawn for the sinking fund for payment at the Farmers' Loan & Trust Co., at 110, interest to cease Nov. 4.

RICHMOND, NICHOLASVILLE, IRVIN & BEATTYVILLE.—This road was sold at public auction Oct. 6, to Col. Bennett H. Young of Louisville, Ky., for the upset price of $160,000. Mr. Young is said to represent Ernest Fawlke of Liverpool, Eng., and Magann & Frayer of Canada. The road was sold at foreclosure in December, 1897, to Adolph Segal of Philadelphia, for $250,000. Mr. Segal failed to pay more than the $25,000 first payment, and a new sale was ordered last July. (Sept. 16, p. 680.)

ST. LOUIS SOUTHWESTERN.—The annual report of this company for the year ended June 30 shows the largest gross and net receipts ever earned, not only by the company, whose organization dates back only to 1890, when it succeeded the St. Louis, Arkansas & Texas, but the largest total ever reported by the system. Even with the gain of 11 per cent., gross expenses, which included much betterment work, were so enlarged that the surplus of the year's operations was only $157,300. This was as compared with a deficit of $63,188 last year. The company did a heavier freight business in 1898 than in any other year, but its passenger business was exceeded in 1895. Making comparisons of 1898 with 1897, we find a gain of 16.3 per cent. in tonnage, and of 10 per cent. in ton-miles, with an increase of only 7.4 per cent. in freight train-miles. The smaller ratio of increase in ton-miles than in tonnage is due to the haul falling off from 213 to 202 miles. This is accounted for by an important development in local business, which also explains a gain in the ton-mile rate of three-tenths of a mill to 1.16 cents. The advance in revenue earning power since 1889 is brought out in the following table, showing these figures for what may be taken as typical years in a ten years' period. The miles operated, 1,223, have been practically uniform:

	Gross Earnings.	Total Net Income.	Balance.
1898	$5,279,300	$1,114,900	†$157,300
1895	5,217,175	1,264,270	†306,200
1894	4,615,140	772,400	*197,770
1893	5,116,080	903,380	*46,400
1890	4,261,900	316,204	*902,830

† Surplus.
* Deficit.

The tonnage, ton miles and freight train miles for each of the years named in the preceding table are shown below:

	Tons Carried.	Tons One Mile.	Freight Tr'n Miles.
1898	1,773,300	358,110,000	2,169,400
1895	1,470,300	309,245,000	1,920,500
1894	1,328,400	282,163,000	1,836,900
1893	1,506,700	329,083,000	2,180,400
1890	1,154,000	258,557,000	1,729,800

As bearing on the advance in the economy of operation shown by these figures, the following figures will be of interest:

	Loaded Car Miles.	P.C. Empty Car Miles.	Av. Car Load.	Av. Train Load.
1898	31,261,500	28.3	11.5	164
1895	28,913,300	25.8	10.7	159
1894	26,611,700	24.1	10.6	152
1893	31,995,300	22.8	16.3	148
1890	31,947,000	23.4	8.1	132

SEABOARD AIR LINE.—The reorganization committee appointed in July last for the Carolina Central (a subordinate company of the S. A. L.), of which Joseph S. Stout of New York is Chairman, announces that the plan of reorganization is effective, since two-thirds of each issue of stock and bonds have either signed the agreement or deposited securities in the trust companies. The committee believes that the plan will succeed and that no foreclosure will be necessary. (Aug. 5, p. 572.)

Electric Railroad News.

DAVENPORT, IA.—Press reports state that the Chicago capitalists interested in the Tri-City Ry., operating between Davenport, Rock Island and Moline, have sold their stock to local capitalists. The Chicago holders were paid par for their holdings, it is stated, amounting to $415,200. The Chicago owners were Clarence Buckingham, John J. Mitchell, S. B. Cobb, W. G. Hibbard, O. S. A. Sprague, D. H. Louderback and others.

LOS ANGELES, CAL.—The Los Angeles Ry. Co. has been reorganized and consolidated with the Main St. & Agricultural Park Ry.; the San Pedro St. RR. has also been bought by the new owners of Los Angeles Ry. The capital stock of the consolidated companies is $5,000,000, and the bonded indebtedness $5,000,000. It is expected to relay several of the lines with heavier rail. The officers are as follows: H. E. Huntington, President; Antoine Borel, Vice-President; I. W. Hellman, Treasurer, and J. T. Burke, Secretary. (Sept. 23, p. 698.)

LONG ISLAND CITY, N. Y.—The New York & Queens County RR. defaulted on the coupons due Oct. 1 on the $2,000,000 first mortgage 5 per cent. bonds of 1896. It is said that the road will be reorganized.

NASHVILLE, TENN.—The Nashville St. Ry. has called for redemption the $149,400 bonds of the McGavock & Mt. Vernon Horse RR., and the same will be paid at par at the First National Bank of Nashville on Oct. 15. An equal amount of Nashville St. Ry. 5 per cent. bonds has been issued, raising the outstanding issue to $633,400.

NEW ORLEANS, LA.—The published plans for the reorganization of the New Orleans Traction provide that the New Orleans City & Lake RR. Co. (a constituent company of the N. O. T.)—or a new company to be formed for the purpose—shall supersede the Traction Co. There will be outstanding against the new company the following securities to be issued and assumed:

Power house 6s of 1897	$143,000
New Orleans City RR. 6s of 1879	399,300
New Orleans City & Lake consolidated mortgage 5s	2,599,500
New Orleans City & Lake new general mortgage 45-year gold bonds to bear 4 per cent. interest for five years and 5 per cent. thereafter, to be a first mortgage on the lines of the Crescent City and a lien after the above consolidated 5s on the lines of the New Orleans City & Lake, to be a lien ranking equally with the consolidated 5s on the equity in the power house	3,250,000
Of this new general mortgage an exchange for present $3,000,000 Crescent City RR. consolidated 5s	3,000,000
To be reserved for acquiring new property	250,000
Five per cent. cumulative preferred stock, to have a preference as to assets and dividends, and the company to have no power to create a new lien without the assent of a majority of the preferred stock. Total issue	2,500,000
Common stock	5,000,000

The basis of exchange is as follows:

$1,000 of old bonds or notes and $100 of old stock.	Amount outstanding.	——Will receive.—— New Bonds.	Pref. Stock.	Com. Stock.
N. O. T. Col. Trust 6s	$1,500,000	.....	$1,000	$500.00
Crescent City consol. 5s	3,000,000	$1,000	.....	.....
" minority stk	354,700	.....	.....	100.00
N. O. City & Lake minor stock	622,900	.....	110	25.00
N. O. Traction stocks—				
Com. paying assessment of $3	?	.....	3	22.50
Com. not paying ass'm't	$5,000,000	.....	.....	10.00
Pref. paying assessment of $6	?	.....	6	100.00
Pref. not paying ass'm't	$2,500,000	.....	.....	50.00

It is estimated that the total annual fixed charges, including taxes, will be, for five years, $380,013; after five years, $410,013.

NEW YORK, N. Y.—The following semi-official announcement concerning the proposed increase in the capital stock of the Third Avenue RR. Co. was made public Oct. 8:

For the purpose of paying its floating debt incurred in the acquisition of the securities of other street railways and for changing the motive power of the Third Avenue line and those acquired lines, it is the policy of the Board of Directors to issue stock from time to time, instead of issuing bonds. Two millions of stock now in the treasury and long since authorized to be issued is now being issued, and further issues will be made, in all probability, from time to time, as additional moneys will be required. The amount required for improvements will not be more than $15,000,000, and the total amount of stock issued in any event will not exceed $35,000,000. A consolidation between the present Third Avenue road and some of its affiliated companies is being considered, and, if carried out, the additional stock will be that of the consolidated company. (Oct. 7, p. 734.)

NORTH ABINGTON, MASS.—The controlling interest in the Rockland & Abington St. Ry. Co. was recently bought by Pepper & Register, a local firm, in the interests of Philadelphia parties.

ROCKFORD, ILL.—Dispatches to Chicago papers state that the City Council on Oct. 2 passed unanimously an ordinance granting a franchise extension of 25 years to the Rockford Ry., Light & Power Co., on condition that it be consolidated within one year with the Rockford Traction Co. The company must pave and re-pave between its tracks and equip its cars with vestibules and fenders. (Oct. 7, p. 734.)

SEDALIA, MO.—The Sedalia Electric & Ry. Co. is incorporated with a capital stock of $400,000 by C. H. Reeve, J. C. Delong and others. This company succeeds to the local lighting and street railroad companies. (May 27, Sept. 2, pp. 384, 640.)

TRAFFIC.

Traffic Notes.

The Pacific Coast Steamship Co. has lately been taking passengers from Tacoma to Skaguay for $10 first class and $5 second class.

On the first of next month the Northern Pacific will reduce local passenger rates throughout Washington and Idaho from five cents a mile to four cents.

The Burlington has issued tariffs reducing grain rates eastbound from Nebraska points to Chicago in an attempt to equalize the reductions through Kansas City and St. Louis.

The Mobile & Ohio is now selling tickets through to Havana by steamer from Mobile. One of the fast through trains of the Queen & Crescent route is now called the "Florida and Havana Limited."

The report that the North German Lloyd Steamship Company is to put on a line of steamers from San Francisco in connection with the Atchison, Topeka & Santa Fe lacks confirmation. Chairman Walker says that he has no knowledge of the plans of the steamship company, and that it is incorrect to say that any arrangement has been made between the North German Lloyd and the Atchison.

Chicago Traffic Matters.

Chicago, Oct. 12, 1898.

The conference between the railroad officers and the members of the Merchants' and Travelers' Association in this city last week has resulted in the formation of a strong committee representing the latter organization to fight the scalping business. Merchants present at the conference say that the commercial travelers, hitherto the friends of the brokers and the backbone of their business, have had enough of the transportation barterers and are now ready to join hands with their old imaginary enemies, the railroads, in a campaign to educate the public and exterminate this fruitful instrumentality in causing passenger rate wars. The traveling men and the commercial bodies have allied with the railroads on the ground of reciprocity, believing that the transportation companies stand ready and willing to give the mercantile interests all they ask in the way of rates, if the former know that these minimum rates will not be further bargained and bartered. The campaign of t he Anti-Scalping Commttee will be conducted from a headquarters in Chicago. J. Mahoney, of the Sioux City Commercial Association, and who was Chairman of the Committee that tried to push the last anti-scalping bill through Congress, will be in charge of the Chicago bureau. In his work he will be assisted by a local newspaper man who has had much to do with railroads and politics and who will run a literary bureau. Municipal legislation is to be abandoned and all efforts bent toward getting a strong law through Congress. The recent conference has already done much to turn public sentiment against the scalpers.

Executive officers of the Chicago lines are anxiously waiting for the Supreme Court decision in the Joint Traffic Association case. If the case is decided in favor of the Association, the Western Trunk Line Committee, which has been working in a rather half-hearted way, will probably be strengthened by the adoption of a new agreement.

There is trouble in the Western Trunk Line Committee. At an important rate meeting in this city, the Chicago Great Western declined to be represented or have anything to do with the conference. This line is not satisfied with the percentages allotted it, and threatens to withdraw, unless it is given a higher rating in the agreement. The Great Western's action has put all the other roads in a nervous condition, and a general slump in rates is looked for by the most conservative, unless Mr. Stickney and his competitors soon come to terms.

When rates for the Omaha Exposition were lowered it was feared that they would cause a subsequent demoralization in passenger fares between Chicago and the Missouri River. Since Chicago Day, however, there has been no decided tendency to go below the agreed rates, and fair returns will be obtained for this business during the rest of the time the show is open.

While it has been decided not to merge the clergy bureaus of the Central and Western Passenger Associations, it is likely that the same general rules for the issuance of these permits will soon govern the territories of the two associations as well as that of the Southwestern Passenger Association. Chairmen Donald, Caldwell and Pratt are now at work on a set of rules that can be used by the three associations without friction.

The Chicago & Alton has decided to continue its week-end excursions from points on its lines in Illinois to this city, notwithstanding the protests of some of the retail merchants along the road. By an arrangement with the Illinois Central, however, the tickets will be limited for return passage to Sunday night, being sold Saturday mornings. The country merchants desired to keep their patrons from shopping in Chicago.

The eastbound lines have agreed to cancel all reduced rates on grain, and restore rates Oct. 18 to the basis of 18 cents Chicago to New York.